

COMMUNICATIONS FOR THE



FMF MARINE

July 2002

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COMMUNICATIONS FOR THE FMF MARINE

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FUNDAMENTALS OF VISUAL



AND EMERGENCY COMMUNICATIONS FOR THE FMF MARINE

PART ONE

FUNDAMENTALS OF VISUAL AND EMERGENCY COMMUNICATIONS FOR THE FMF MARINE

Overview

Scope *Fundamentals of Visual and Emergency Communications* is the first of three parts to this job aid, *Communications for the FMF Marine*. Part two and three are titled *Basic Voice Communications Procedures* and *Environmental Effects on Radio Communications*.

Content Part one teaches the fundamentals of visual and emergency communications. This is a valuable skill when conducting field exercises abroad.

In This Job Aid Part one contains the following topics:

Topic	See Page
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Frequent Pyrotechnic Signaling Methods

Signaling Methods

There are different methods you can use for pyrotechnical signaling. In this section, you will be introduced to four of the most frequently used methods.

Method	Description
Identification of friendly units	<p>Pyrotechnics are commonly used when marking designated areas. Reminder: When you use pyrotechnics to mark your position, both friendly and enemy troops will <u>know</u> your position.</p> <ul style="list-style-type: none">• Landing site for MEDEVAC• Re-supply• Troop drop/pickup• Identifying your lead element
Controlling fire and movement	<p>Pyrotechnics are usually the best method for this task. Examples include:</p> <ul style="list-style-type: none">• Open fire• Cease-fire• Advance• Break contact• Halt• Direct a unit's movement
Marking targets	<p>You can mark targets using smoke grenades, flares, or star clusters directly on the target or close by. Use pyrotechnics as a visual reference point by positioning a smoke device with a grenade launcher, mortar tube, or popping it by hand. You can also direct a fire mission using smoke as a reference point. The following example illustrates how you can adjust close air support using a pyrotechnic device. Example: "From green smoke, cardinal direction (N, S, W, E), at 100 meters, enemy machinegun."</p>
Reporting locations	<p>There are a number of times when you need to report your location. The most common means involves a pre-determined pyrotechnic signal that indicates a unit's arrival at a specific checkpoint.</p>

Advantages and Requirements

Advantages

There are two advantages for using pyrotechnic signals:

- Speed--rapid transmission of information reaching large numbers of friendly personnel.
 - Minimal training is required.
-

Requirements

Two important requirements for pyrotechnic signaling are as follows:

- Ensure that all personnel involved have knowledge of prearranged codes.
 - Plan around and anticipate the availability and quantity of pyrotechnics.
-

Air Panels

Purpose Air panels are used by ground troops to

- Communicate short and concise messages
 - Identify positions to friendly aircraft
 - Set up Landing Zones (LZ's)
 - Set up message pick-up/drop sites
-

Types The two different types of air panels are

- Position marking panels
 - Signaling panels
-

Marking Panel Marking panels are used to signal friendly ground and air personnel.

Panel	Description
Characteristics	<ul style="list-style-type: none">• Panel size: 2 x 1.5 ft.• Each side has a different color: one side is a light color and the other side is dark
Actions	When aircraft approaches <ul style="list-style-type: none">• Shake panels vigorously in the direction of an aircraft to attract attention.• Use common sense in these situations. (Avoid exposure on the skyline and to combat fires.)

Note: You can use towels, handkerchiefs, toilet paper, or anything reflective and visible.

Signaling Signaling panels are used to communicate with aircraft through the limited use of a code.

Signaling panel	Description
Characteristics	<ul style="list-style-type: none">• Panel size is 6 ft. x 2 ft. 3 in.• One side of the panel is lighter in color than the other.• Improvise flexible colored strips (vehicle hazard safety equipment), imprints in snow, sand, or anything that is visible from the air.

Pilots and Aircrews Emergency signals are the only air panel instructions that pilots and aircrews have with them on a routine basis.

Note: The ACP-136 provides guidance for the communications of ground and air signals. Communicators working with air personnel should have a working knowledge of these techniques. Radio silence can be worked around with the life saving use of panel signaling.

Panel Signaling



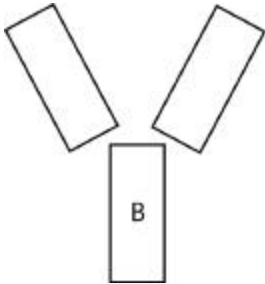
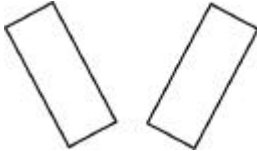
Instruction

Remember that with the exception of emergency signals, working with air panels requires prior liaison with the aircraft. Proper coordination before every mission is the key. The following information will present you with a basic understanding of the

- Four types of indicators
- The basic undesignated numerical indicators

Four Types of Indicators

There are four indicators available for panel signaling. The indicators are identified in the table below:

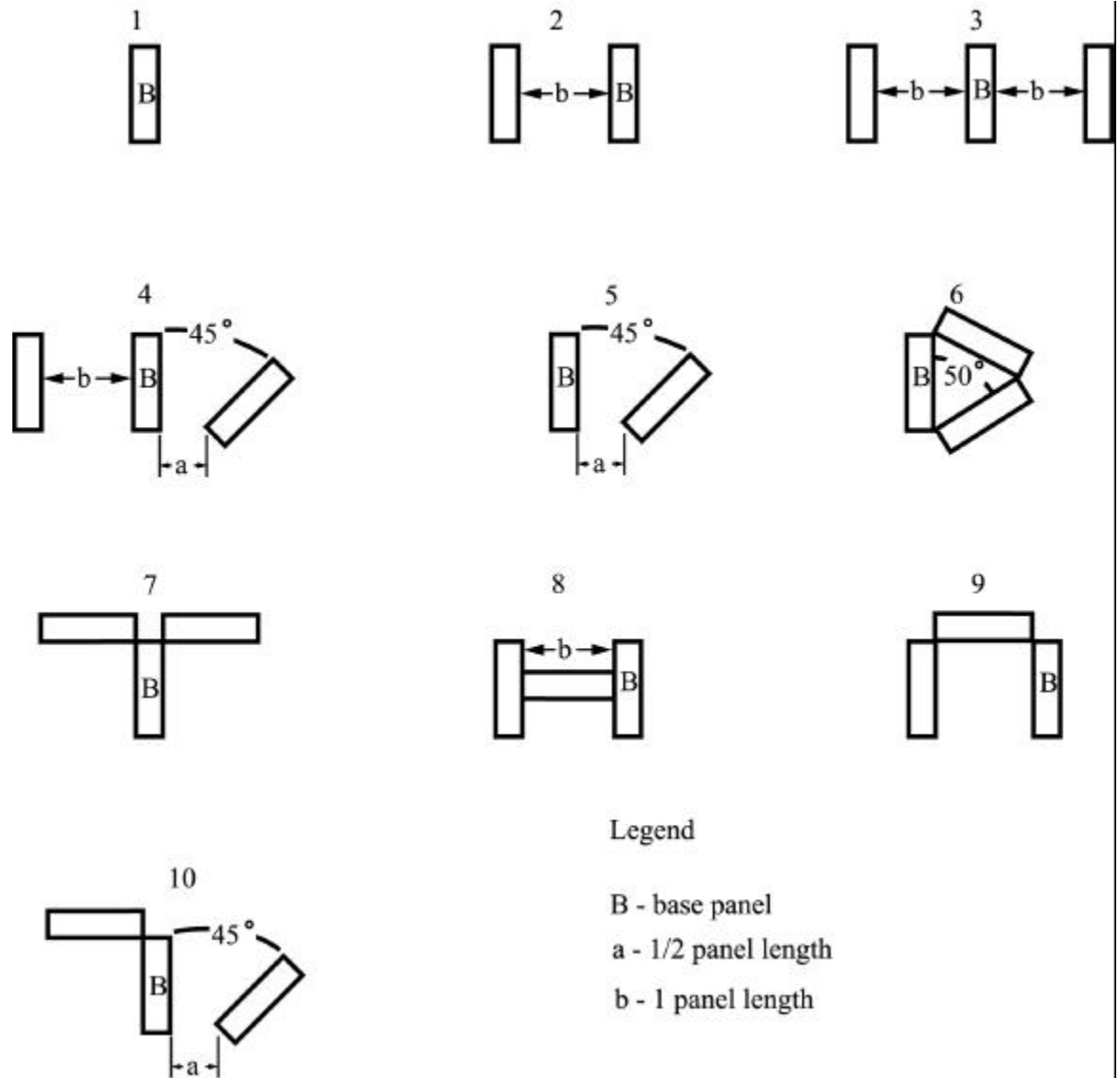
Type	Description
Index Flash Indicator	Vocabulary indicator by numbers that represent phrases and expressions 
Letter Indicator	Numbers 1 through 26 that represent the 26 letters of the alphabet (A-Z) 
Figures Indicator	Each has an indicator 
Morse Code Indicator	A system of dots and dashes that represent the alphabet and numbers. The indicator reads as an index flash meaning “read as Morse code.” 

Note: Each indicator can serve its purpose alone or combine itself with other indicators to convey a different message.

Figure Panel Indicators

Panels (1-10)

The diagram below designates a symbol that represents numbers one through ten. Standing alone, these symbols are numbers only.



(Graphics not to scale)

Note: These numbers are also used in conjunction with indicators to signal intended messages.

Index Flash Indicators

Description

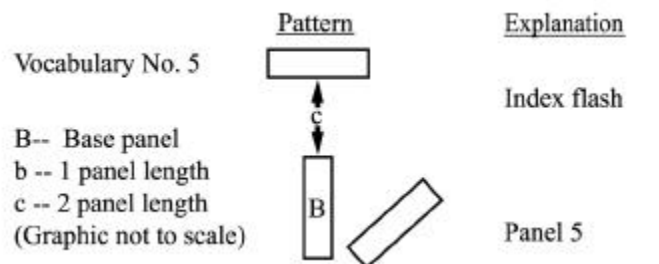
Index flash is described as

- A single panel centered above and at right angles to the base of panels
- The last panel put in place and the first to be picked up when the pattern is changed or removed
- “Read as in vocabulary” without any other indicator
- “Top of a number or word group” and “Ready to read”



Example

This example shows how signaling panels are used to communicate a message to another unit/aircraft. In this case, the index flash is used alone, without a special indicator and means "read as in vocabulary" represented by the number "five."



Letter Indicator

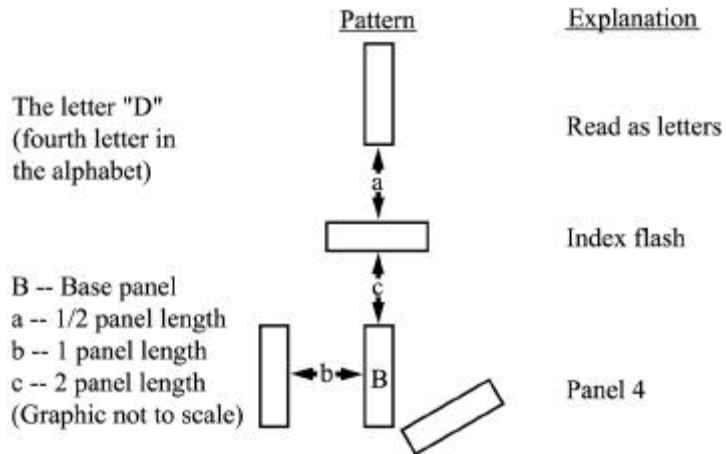
Description

The letter indicator is shown as an index flash that means “read as letters” numbered 1-26 representing the letters of the alphabet.



Example One

This example of a letter indicator is placed 1/2 panel length above the index flash and in line with the basic numerical panels that means "read as letters."



Example Two

The interpretation is read as the letter “P.”

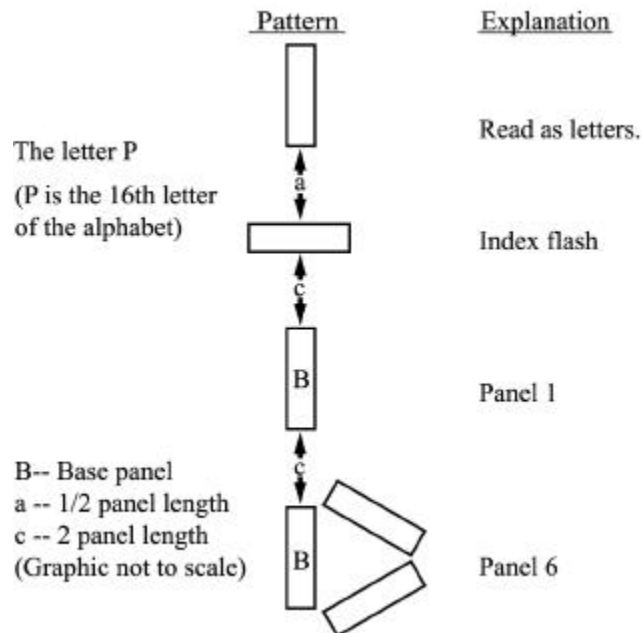
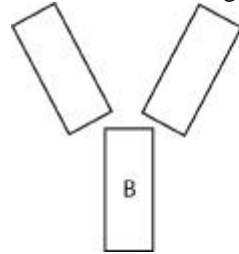


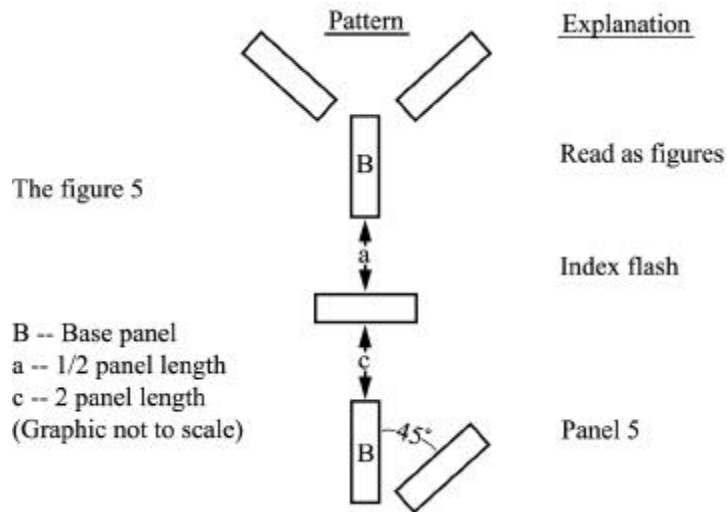
Figure Indicator

Description A figure indicator is used when sending of figures such as quantities or coordinates.

Panel Code Figures This is shown above an index flash figure that means “read as figures” where B marks the base panel.



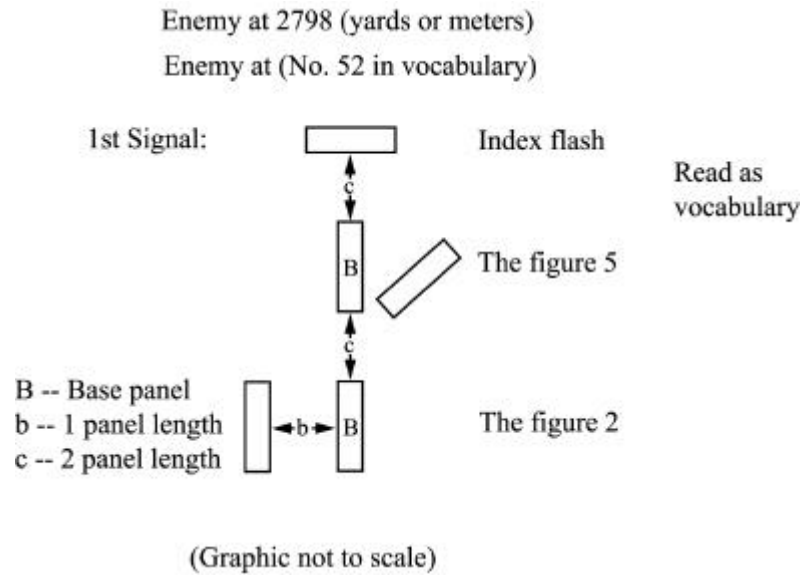
Example One Single number indicator for the number “five.”



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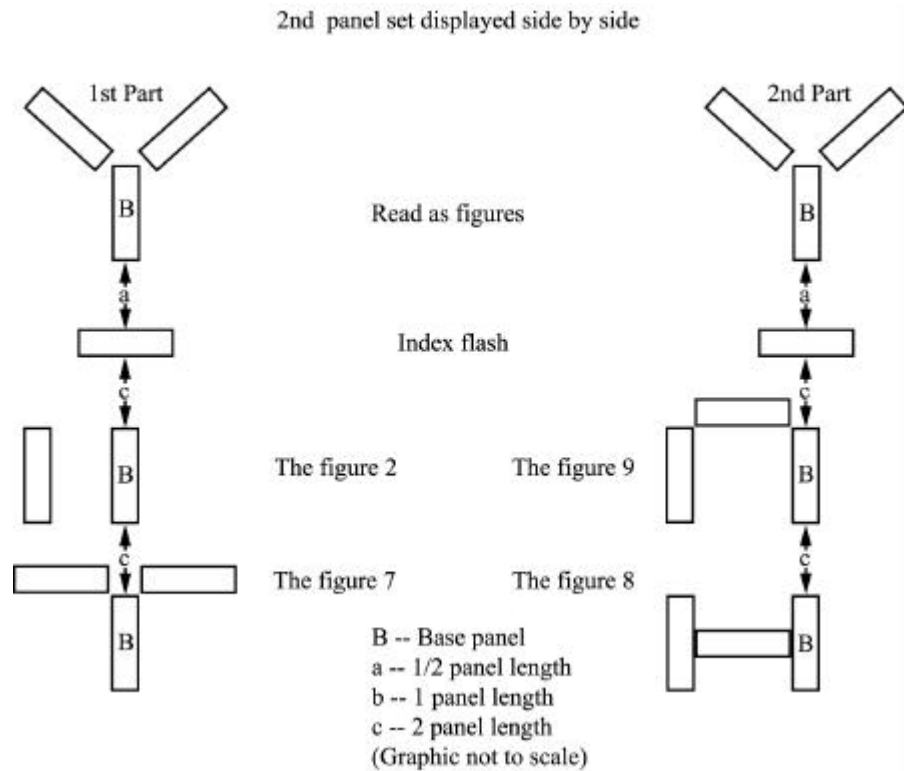
Figure Indicator, Continued

Example Two Designated as grid coordinates "2798" is the panel code of key #52 shown in Panel Code System.



Note: Example two is a combination of indicators resulting in the location of the enemy at grid 2798.

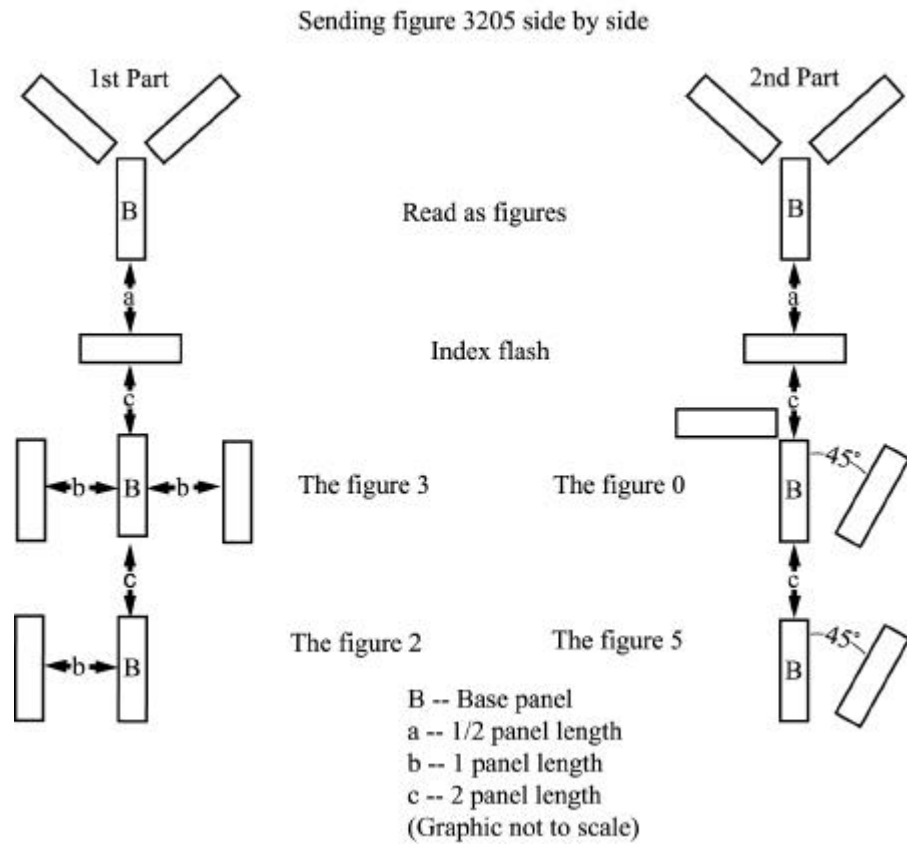
Example Three The "Enemy Grid Location 2798" (within 1000 meters) is shown below.



Continued on next page

Figure Indicator, Continued

Example Four The grid coordinates “3205” is preceded with the designator.



Panel Code System

Main Combat Messages

The combat messages indicate single digit numerals only (0-9). Looking back on Index Flash Indicators, there is one example using the panel code system.

Key	Meaning and Translation
0	You may land here.
1	We are attacking.
2	Do not parachute or land for the time being.
3	Request food supplies.
4	Request water.
5	Request ammunition for small arms.
6	Request medical supplies.
7	Request POL.
8	We have attained our objective.
9	(Blank)

Intelligence on Friendly Action

Intelligence on friendly action is indicated by double-digit numerals (00-09).

Key	Meaning and Translation
00	I am staying here.
01	Our attack has failed.
02	We are in position and ready to attack.
03	We are taking up defensive position here.
04	We have been stopped by anti-tank obstacles in the direction indicated.
05	Our troops are at (followed by coordinates).
06	We are surrounded.
07	We are pulling back.
08	We are going to move. (Direction or coordinates of new location can be shown.)
09	We are changing command post. (May be followed by coordinates of new location.)

Procedural Signals

Procedural signals are indicated by double-digit numerals (10-19).

Key	Meaning and Translation
10	Wait. (Figures may follow showing number of minutes.)
11	I have a message for you.
12	Received your message.
13	Repeat you message.
14	Cancel last message pattern.
15	Separating signs.
16	Nothing more to say.
17	No or negative.
18	Yes or affirmative.
19	Come back tomorrow.

Continued on next page

Panel Code System, Continued

Liaison

Liaison is indicated by double-digit numerals (20-29).

Key	Meaning and Translation
20	I did not receive your signals.
21	Your signals are weak.
22	Radio not ready or unserviceable.
23	Your message was not understood.
24	Are you receiving my signals?
25	I have no other means of communication.
26	Use visual signals.
27	Message understood.
28	I am asking for contact on following frequency.
29	(Blank)

Artillery Observation

Artillery observation is indicated by double-digit numerals (30-39).

Key	Meaning and Translation
30	Not ready to fire.
31	Ready to fire on target.
32	Cannot fire on target.
33	Check reference on map.
34	I do not need you anymore.
35	(Blank)
36	I know my position (general).
37	I am moving towards the site-in the direction indicated (general).
38	I am going to a water point or a supply depot indicated by you and will remain there (general).
39	Everything all right-no help requested (general).

Special Requests

Special requests is indicated by double-digit numerals (40-49).

Key	Meaning and Translation
40	Request (followed by letters or figures). These figures may show number of packages to be dropped.
41	Request reinforcement.
42	Request mortar ammunition.
43	Request anti-tank ammunition.
44	Request artillery ammunition.
45	Request additional instructions.
46	Request my position.
47	Request shoes and clothing.
48	Request medical assistance.
49	(Blank)

Continued on next page

Panel Code System, Continued

Intelligence on Enemy Action

Intelligence on enemy action is indicated by double-digit numerals (50-59).

Key	Meaning and Translation
50	The enemy is attacking.
51	The enemy in possession of landing field.
*52	The enemy is at . . . (followed by coordinates).
53	Enemy attack has broken through.
54	Enemy attack has failed.
55	Enemy preparing attack.
56	Have been informed enemy aircraft approaching.
*57	Enemy concentration in direction shown.
*58	Enemy automatic weapons in direction shown.
*59	Enemy artillery in direction shown.

Note: *Numbers 52, 57, 58, and 59 may be accompanied by a figure showing hundreds of meters or yards depending upon user.

Instructions for Aircraft

Instructions for aircraft are indicated as double-digit numerals (60-69).

Key	Meaning and Translation
60	Carry out reconnaissance in direction shown.
61	Following is magnetic direction. Letters or figures show reading.
*62	Ask for air support in direction shown.
*63	Interesting target in direction shown.
64	If you can see our elements, fly in circles in the direction shown.
65	Give my position to the command post.
66	Indicate closest food supplies by circling and flying in the correct direction.
67	Indicate closest water point by flying in circles and in the correct direction.
68	Do not attack.
69	(Blank)

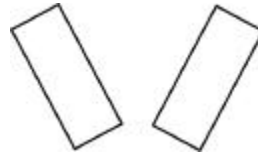
Note: *Numbers 62 and 63 may be accompanied by a figure showing hundreds of meters or yards depending upon user.

Morse Code Indicator

Morse Code

The letter V, placed 1/2 panel length above the index flash in line with the basic numerical panels, means: "Read as dots and dashes in Morse code."

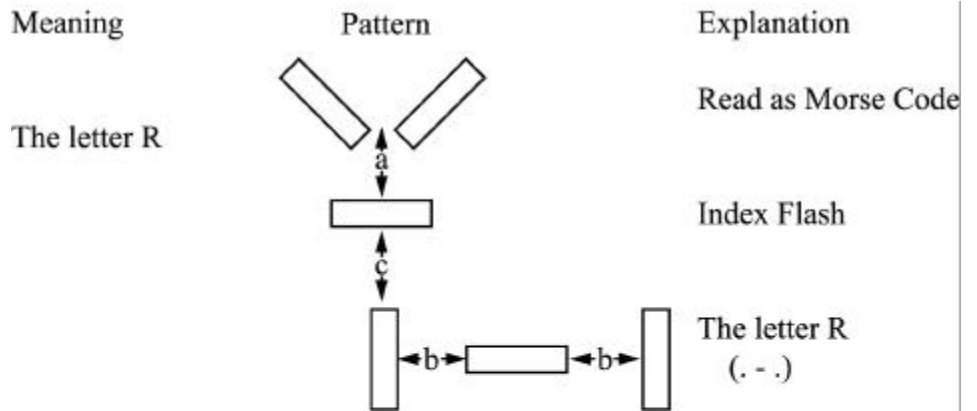
When letters are sent in Morse code (see Morse Code), a panel perpendicular to the index flash represents a dot; a panel parallel to the index flash represents a dash.



Note: Morse code indicator above index flash means "read as Morse code."

Example One

Sending the letter R:



Combinations of more than two letters are sent in groups of two. The separation sign (No. 15 in the vocabulary) is used to separate groups of signs or letters sent one after another.

- a -- 1/2 panel length
- b -- 1 panel length
- c -- 2 panel length

Aircraft Signaling and Acknowledge Receipt

Aircraft Responses

If you are communicating with an aircraft using air panels, how do you know if your messages are being received and understood? An aircraft will respond "yes" or "no" to questions? In a life or death situation, it is extremely important to find out if your signals are being understood.

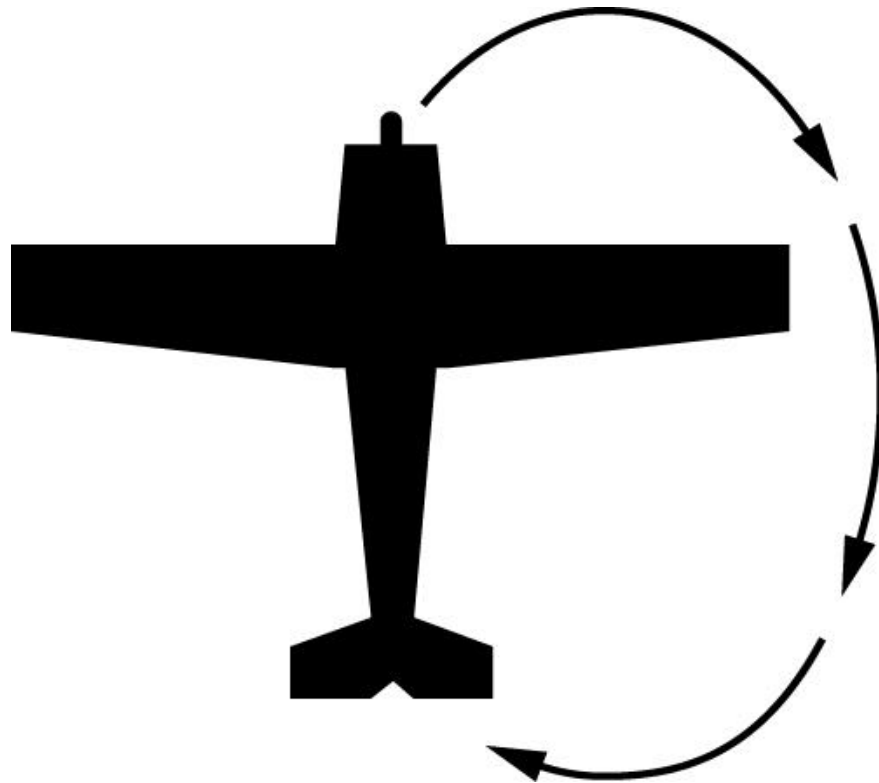
Acknowledgement

If a message or signal has been received and understood by an aircraft, it will dip its wings up and down or begin rocking. Be alert for this form of acknowledgement.



Non-Acknowledgement

When the message is received but not understood, the aircraft will make a 360-degree turn to the right.



Note: Tactical situations will dictate this form of response by an aircraft.

Ground/Air Visual Emergency Signals

Emergency Signals

Earlier, you read about panel signaling indicators. There is a good chance that you may never send messages with air panels. However, it is important to possess and become familiar with the use air panels in the case of emergency signals.

Types of Emergency Signals

There are three types of emergency signals shown on the next two pages:

- Ground/Air visual signals for use in emergency by survivors
- Ground/Air visual signals for use in emergency by search parties
- Ground/Air visual signals for emergency use in military operations



















Note: These symbols stand-alone. **Do not** use indicators for these codes. You simply set up the signal on the ground and no more than that. You may find that some type of attention gainer is needed to draw the attention of an aircraft to your panel signals. Mirrors, marking panels, smoke, or fire are good obvious “attention gainers”.

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Ground/Air Visual Emergency Signals, Continued

Signals Used By Survivors

Personnel who have use of the emergency signals illustrated in the table below have either crashed, landed, or parachuted in a distant area. These survivors may require medical aid, food, or some other form of assistance. These signals are used for emergencies only.


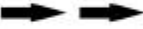
	Require doctor serious injury		Probably safe to land here
	Require medical supplies		All well
	Unable to proceed		Require fuel and oil
	Require food and water		No
	Require firearms and ammunition		Yes
	Indicate Direction to proceed		Not understood
	Am proceeding in this direction		Require mechanic
	Will attempt take off		Require map and compass
	Aircraft badly damaged		Require signal lamp with battery and radio

Ground/Air Visual Emergency Signals, Continued

Signals Used for Search Parties

The following signals are used for search parties.

Ground/Air visual signals for use in emergency by search parties

LLL	Operation complete		Have divided into two groups, each proceeding in direction indicated
LL	We have found all personnel		Information received that aircraft is in this direction
++	We have found only some personnel	N	Nothing found. Will continue to search
X	We are not able to continue. Returning to base		

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Ground/Air Visual Emergency Signals, Continued

Signals used for Military Operations

These are operational cues are meant to signal rapid and timely information.

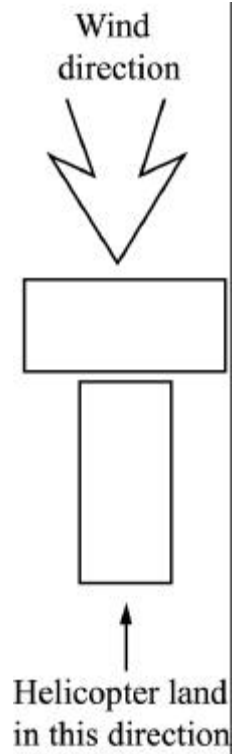
	Casualty requiring immediate evacuation		Nothing more to communicate
	Require radio with batteries		I have a message for you
	Require radio batteries		Message received
	Ground party in action with enemy		Are you receiving my signals
	Enemy attacking or preparing to attach (from direction of apex of A)		Enemy in possession of landing ground
	Target of opportunity in direction shown		Temporary landing delay
	Request air support in direction of arrow (each band 200 yards)		Do not land here
	Enemy concentrated in direction indicated. Not in contact		Land in this direction (from base to head of "T")
	Enemy withdrawn		Emergency drop here
	Cancel air strike		Helicopters touch down
	Cancel supply drop		

Note: Navy/Marine aircraft personnel keep these diagrams on board with them in their assault support helicopter checklists.

Symbol for Helicopter Landing Site

Helicopter Landings

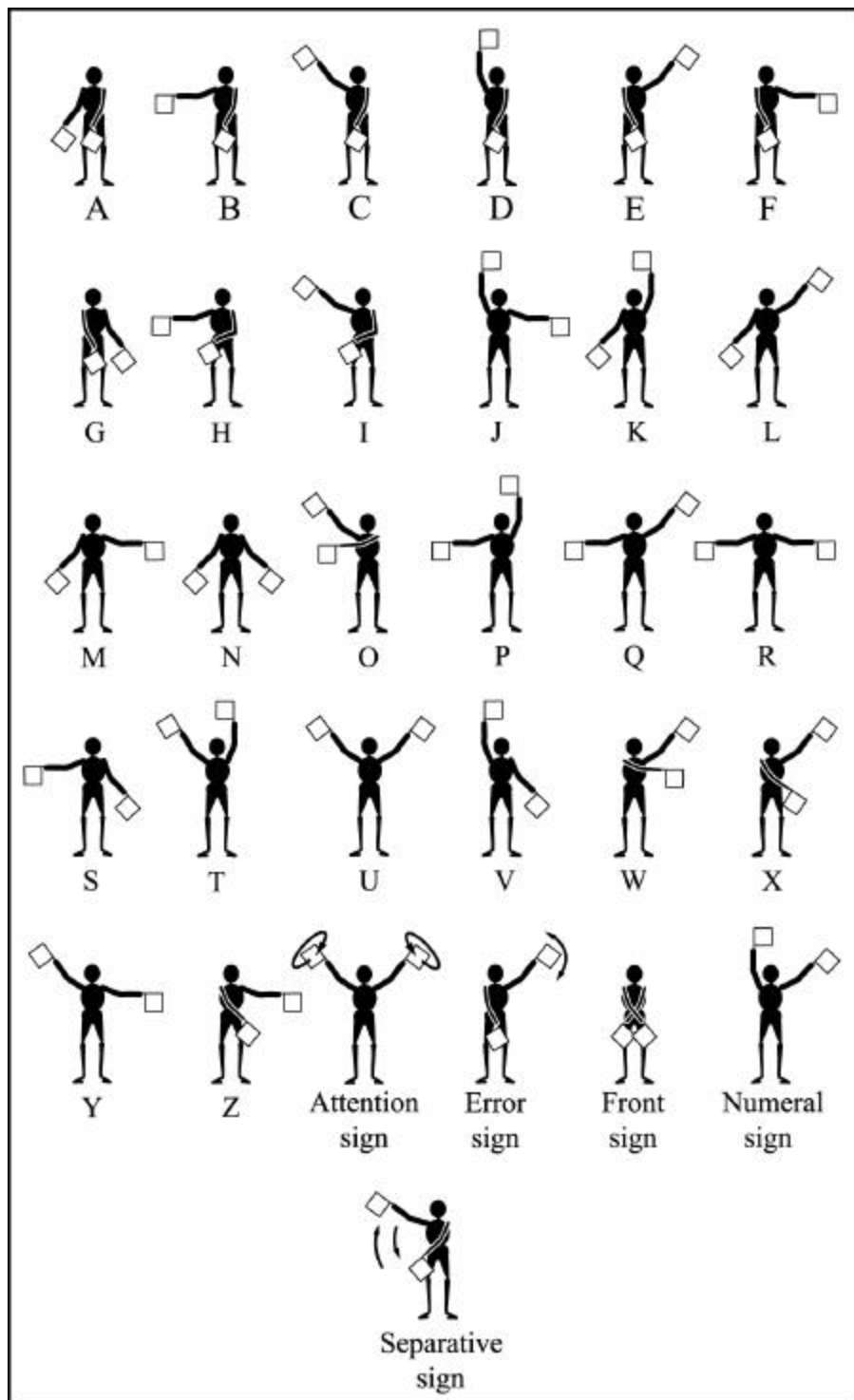
When helicopters are used in emergency situations, it is important that you understand the use of the "T" signal-wind direction indicator. The safest way for a helicopter to land is to face into the wind. When setting up a landing zone (LZ), the "T" is placed so that the wind blows from the top of the "T" to the bottom.



Standard Semaphore Flags

Standard Semaphore Signs

The graphic below shows all the semaphore characters. They are shown as if they are being sent to you.



Note: In certain characters, the signs may be formed with the position of the arms reversed.

Continued on next page

Standard Semaphore Flags, Continued

Use of Semaphore Flags

Another means of communications is the use of semaphore flags (hand-held flags). Standard semaphore flags are two-hand flags generally 15 to 18 inches square. The flags are attached to staffs, which are approximately 22 inches long.

If you are in the field and find that you have no other means of communications, or if radio silence is in effect and you have information to send to an adjacent unit, any form of field expedient hand flags can be used to send information. You should try to use flags that are close to the standard size of semaphore flags. Handkerchiefs, towels, sticks, branches, or anything practical can be used if flags are not readily available.

Transmit Pre-arranged Signals

A unit leader may design his own signals to control the maneuver of his troops or inform adjacent units that he is in position, moving out, halting, etc.

The Front Attention Sign followed by the letter C

The "**attention sign**" is a preliminary call used to get the attention of the receiving unit/station.



When the receiving station sees the attention sign, he should get a pen and paper ready for writing down the message. You will acknowledge the attention sign by sending the answering sign (C) and then begin copying your message together.



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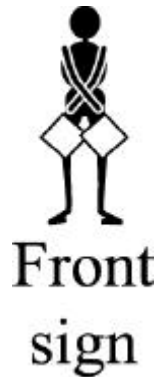
Standard Semaphore Flags, Continued

A Distinct Pause

When you actually send your message, there should be a distinct **pause** at the end of each character to separate each meaning.

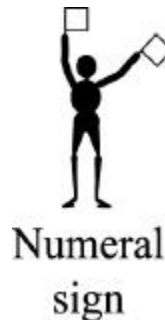
The Front Sign

The message should be transmitted at a steady rate. A "**front sign**" is made at the end of each word or group together.



The Front Numerical Sign

The "**numeral sign**" is used **before and after each group** of numerals or groups of mixed letters/numerals; in the text, which are to be recorded and counted as a single alphanumeric group. The separate sign, written as a dash (-), is used to separate different components of a message and to prevent mistakes in reception, which might occur if letters or figures of adjacent groups are run together.



When you are actually transmitting, the background from the point where you are standing must not interfere with your silhouette for signaling. Keep in mind that this position must also be shielded from enemy observation. The table below shows all the semaphore characters.

Morse Code

Alternate Means of Communication These are used in other circumstances instead of radio and wire. Morse code can be sent many ways, which is only limited by one's imagination.

Morse Code Usage It is easy to use and can be transmitted and received by anyone. An untrained individual can use a chart showing the letters, figures, and punctuation. The pace of Morse code can be slowed to any transmission or receiving speed.

Letters and Figures International Morse Code.

Letters					
A	·-	J	·----	S	···
B	····	K	··-	T	-
C	····	L	····	U	··-
D	-	M	--	V	····
E	·	N	··	W	··-
F	····	O	---	X	····
G	··-	P	····	Y	····
H	····	Q	····	Z	····
I	··	R	··-		
Figures					
1	·----	5	····	9	····
2	····	6	····	0	····
3	····	7	····		
4	····	8	····		

Continued on next page

Morse Code, Continued

**Element,
Character,
and Group**

You will need to know the five parts of the Morse code.

Part	Action
Element	Each element is either a dot or a dash, see the figures and examples below. <ul style="list-style-type: none"> • The letter "P" (.-.) has four elements • The letter "A" (-.) has two elements
Character	Represents a letter and number examples. <p style="text-align: center;">-... (B)</p> <p style="text-align: center;">...-- (3)</p>
Group	These are made up of words or numbers such as: <p style="text-align: center;">-.-. --- -.. . (CODE) The word</p> <p style="text-align: center;">and</p> <p style="text-align: center;">..--- ----- (250)</p>
Dot	A short noise (sound) or flash (light). A dot is the standard unit of duration in Morse code.
Dash	Represents a noise, or flash of light that is three units in length.

Remember: The spaces between characters are three units.
 The spaces between groups are seven units.
 A dot is one unit in length.
 A dash is three units in length.

**Transmitting
Morse Code**

The three most commonly used methods to send Morse code are

- Light-Flashlights, headlights, household light bulbs, or signal lamps
- Sighting-Air Panels
 - Horizontal panel depicts a dash
 - Vertical panel depicts a dot
- Sound-Horns, buzzers, scraping metal on metal, pounding on a metal object with a hammer

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Morse Code, Continued

Call up Preparation

Step	Action
Before transmitting a message, you must	<ul style="list-style-type: none">• Encode your message in to Morse code• Write your message the way you will send it
Once you are ready to send your message	<ul style="list-style-type: none">• Call up the receiving station• Send three or four "Vs" at a time• Wait until the receiving station signals that it is ready to receive traffic
The receiving station will signal by sending	<ul style="list-style-type: none">• His call sign when he is ready to receive• A copy of the elements, characters, and groups exactly as they are sent• When you have successfully copied the entire message, you now decode it

Encoding

Before transmitting a message, encode your message, and then write your encoded message the way you will send it "Cease Fire."

Decoding

After looking on your code list, you should come up with the following message written down for transmission:

“ C / e / a / s / e f / i / r / e ”
“ -.- / . / .- / ... / . ..- / ..- / ..- / . ”

Speed

Never send messages faster than the receiver is capable of copying.

Safety Net (Emergency Frequencies)

Requirement for Training

The Marine Corps requires admin and safety radio established.

- Available 24 hours a day
 - For any serious problems you could have in the field such as
 - Vehicle accidents
 - Snake bites
 - Hypothermia
 - Heat strokes
 - Fire victims
 - Aircraft accidents
-

Range Safety

These frequencies

- Differ from base to base.
 - Are established safety stations that require you to check in and out with them when you enter and depart the range area.
 - Make contact with range safety every 30 to 60 minutes while in any area of operations
-

National Distress Frequency

Characterized by

- The frequency of **243** MHz
 - (UHF) frequency range (225.000 MHz – 399.975 MHz)
 - Monitored at all times by military aircraft
 - Commonly referred to as “the guard frequency” by all aircrews
-

International Distress Frequency

Characterized by

- Frequencies that range between **2182** kHz and **8364** kHz
 - High Frequency (2000 kHz to 29999.9 kHz)
 - International Distress use only
 - Times of conflict, you must use good judgment when using it
 - All ships and waterborne craft should be monitoring it
-

Continued on next page

Safety Net (Emergency Frequencies), Continued

Communications with Merchant Vessels

Use the MRC-138 when

- You are near water and cannot contact anyone on the HF "International Distress Frequency," there are other frequencies that commercial merchant vessels monitor regularly.
 - Alternate frequency 2738 kHz is monitored in all areas of the world **except** the Great Lakes and the Gulf of Mexico.
 - In the Gulf of Mexico, 2830 kHz is monitored.
-

Emergencies Only

All frequencies as shown below are for quick, easy reference. Because these frequencies are used for emergencies, they should never be used for anything else. They must be kept clear unless you have an actual emergency.

RADIO	FREQUENCY	MODULATION	DESCRIPTION
PRC-113/VRC-83	243 MHz	Amplitude Modulated	National Distress Frequency
MRC-138	2182 kHz 8364 kHz	Amplitude Modulated	International Distress Frequency
	2738 kHz	Amplitude Modulated	Commercial Merchant Vessels (except Great Lakes and Gulf of Mexico)
	2830 kHz	Amplitude Modulated	Commercial Merchant Vessels (Gulf of Mexico)

Note: *Also included is the SINGARS family of radios VRC-88, MRC-119, and the MRC-145 with a frequency range of 30.00 MHz to 87.975 MHz.

Emergency Distress Signals


You just discovered the frequencies that are used during emergencies, but what do you actually say when you call? "Mayday" is the radiotelephone-spoken word for actual emergencies. You should always begin your emergency call with the word "Mayday."

Example: "Mayday Mayday, this is W4B over."

International Distress Signals

Distress Signals

There are a variety of distress signals used throughout the world for emergencies. The most widely used and understood types of international distress signals are explained below:

Type	Description
Gun or other explosive signal	The loudest noise you can possibly make at intervals of 1 minute will aid search and rescue persons in finding you.
Rockets or shells	Throwing red star clusters fired one at a time at short intervals will alert any passersby that you need help.
"SOS"	This group sent in any form will relay your message for help. It can be sent by Morse code, by etching the letters into the ground, or placing large letters made of material in a conspicuous place.
Lowering and raising your arms	This is done while standing on a hilltop or some other obvious place and slowly and repeatedly raising and lowering your arms while they are stretched out to each side. 

Summary

Part one of this job aid identified and provides a better understanding of visual communications procedures, a secondary and emergency means of communications. Various alternate visual signals for communications such as pyrotechnics, air panels, semaphore, and visual Morse code were covered. This job aid also covered emergency frequencies that are used around the world

In part two, you will learn how to identify and understand voice radio procedures.

BASIC VOICE RADIO



COMMUNICATION PROCEDURES FOR THE FMF MARINE

PART TWO

BASIC VOICE RADIO COMMUNICATION PROCEDURES FOR THE FMF MARINE

Overview

Scope Part two identifies and gains an understanding of voice radio procedures.

Contents This section contains the following topics.

Topic	See Page
Overview	2-1
Pronunciation of Letters and Numbers	2-2
Pro-Words	2-4
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Message Categories and Common Pro-Signs	2-10
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Pronunciation of Letters and Numbers

Introduction

In the United States, the English language does not always sound the same when spoken by people from different parts of the country. For example, a Marine from Boston might have difficulty understanding a Marine who is from Mississippi.

Interpretation

Language is interpreted in many ways so you must eliminate any possible confusion while passing a message over a tactical radio.

- Spell out words that require the use of the phonetic alphabet.
- Identify each letter by a phonetic word.

Example: "MOVE, Mike Oscar Victor Echo, MOVE," (state the word before and after its phonetic spelling).

Letter	Spoken as	Letter	Spoken as
A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliet	W	Whiskey
K	Kilo	X	X-Ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

Phonetic Numbers

Phonetic pronunciations for numerals also are used to separate the following mispronunciations.

- Nine (9) is pronounced "niner" to keep it from getting confused with the number five (5).
- Zero (0) is used as a number and Oscar as a letter for "O."
- There are many instances when letters and numbers are used together, so it is extremely important to get your zeros (0) and Oscars (O) correct before you transmit them over a radio.

NUMERAL	SPOKEN AS	NUMERAL	SPOKEN AS
0	Zero	5	Fife
1	Wun	6	Six
2	Too	7	Seven
3	Tree	8	Ate
4	Fo-wer	9	Niner

Attention to Detail in Recording

When you are copying a message over the radio, that message may pass through many hands once it leaves you. It is important that everyone that needs to read your message has absolutely no question as to what each and every character (letter or number) represents.

Note: To accomplish this, each letter of the alphabet should be written in block capital letters and each number written.

Continued on next page

Pronunciation of Letters and Numbers, Continued

Numbers with Hundreds and Thousands

With the exception of numbers containing even hundreds and thousands (e.g. 500, 2,000) all numbers are pronounced one-digit at a time.

Examples:

- 490 "fo-wer, niner, zero"
- 182861 "Wun, ate, too, ate, six, wun"

Exact multiples of hundreds or thousands would be given with the word hundred or thousand as appropriate.

Examples:

- 57,000 "fife, seven thousand"
 - 2900 "too, niner hundred"
-

Written Numbers and Letters

Specific appearance for some characters include:

- A horizontal line through the letter "Z." to keep it from being confused with the number "2."
 - The number "1" is always written with a horizontal line under it.
 - To avoid the number "zero" and the letter "oscar" from being confused, a diagonal slash (/) is put through the number "zero" (0).
-

Pro-Words

Definition Each pro-word conveys a specific meaning or phrase, which is intended to eliminate any verbal misinterpretation.

Transmission Standard transmissions

- Battlefield with its electronic warfare capability puts you and your unit in danger every time you key your handset.
- All transmissions are limited to a few short seconds.
- All become in danger of being a target (bracketing) without knowing it.

Minimal transmissions

- To keep transmission time to a minimum with the use of pro-words.
- Accomplished by the use of words or phrases.
- Expedite messages along the communication route.

Pro-Word Meanings

There are several pro-words used by Marines that are much easier to remember than you might think. Fifty-one pro-words are listed below.

Pro-Words	Meanings
ALL AFTER	The portion of the message to which I refer is all that follows.
ALL BEFORE	The portion of the message to which I refer is all that proceeds.
AUTHENTICATE	The station is to reply to the challenge, which follows.
BREAK	I hereby indicate the separation of the text from other portions of the message.
CALL SIGN	The group that follows is a call sign.
CORRECT	You are correct, or what you have transmitted is correct.
CORRECTION	An error has been made in this transmission (continue by saying the phrase correctly.)
DISREGARD THIS TRANSMISSION-OUT	This transmission is in error, disregard it. (This pro-word must not be used to cancel any message that has been completely transmitted and for which receipt or acknowledgment has been received.)
DO NOT ANSWER	Stations called are not to answer this call, receipt for this message, or otherwise transmit in connection with it. (This transmission must end with the pro-word "OUT.")
EXECUTE	Carry out the intent of the message or signal to which this applies. (To be used only with the executive method.)
EXECUTE TO FOLLOW	Action on the message or signal which follows is to be carried out upon receipt of the pro-word "EXECUTE." (To be used only with the delayed executive method.)
EXEMPT	The addressees immediately following are exempt from the collective call.
FIGURES	Numerals or numbers follow.
FLASH	Precedence "FLASH."
FROM	Originator of this message is indicated by the address designation immediately following.
GROUPS	This message contains the number of groups indicated by the numeral following.
GROUP NO COUNT	Groups in this message have not been counted.
IMMEDIATE	Precedence "IMMEDIATE."
INFO	Addressee designations immediately following are addressed for information.
I READ BACK	The following is my response to your instructions to read back.
I AUTHENTICATE	The group that follows is the reply to your challenge to authenticate.
I SAY AGAIN	I am repeating transmission or portion.

Continued on next page

Pro-Words, Continued

Pro-Word Meanings, continued

Pro-Words	Meanings
I SPELL	I shall spell the next word phonetically.
I VERIFY	The following has been verified at your request and is repeated. (Use only to reply on "VERIFY.")
MESSAGE	A message, which requires recording, is about to follow. (Transmitted immediately after the call.)
MORE TO FOLLOW	Transmitting station has additional traffic for the receiving station.
NUMBER	Station serial number.
OUT	This is the end of my transmission to you, and no response is necessary.
OVER	This is the end of my transmission to you, and a response is necessary, go ahead; transmit.
PRIORITY	Precedence "PRIORITY."
READ BACK	Read this entire transmission back to me exactly as received.
RELAY (TO)	Transmit this message to all addressees or to the address designations immediately following.
ROGER	I received your last transmission satisfactorily.
ROUTINE	Precedence "ROUTINE."
SAY AGAIN	Repeat all of your last transmission. Followed by identification data "Repeat (portion indicated)."
SERVICE	Message that follows is a "SERVICE" message.
SILENCE (Repeated three or more times)	Cease transmissions immediately. Silence will be maintained until you are instructed to resume. (When an authentication system is in force, transmissions imposing silence are to be authenticated.)
SILENCE LIFTED	Resume normal transmissions. Silence can be lifted only by the station imposing it or by higher authority. When an authentication system is in force, transmissions lifting silence are to be authenticated.
SPEAK SLOWER	Your transmission speed is too fast; reduce it.
THIS IS	This transmission is from the station whose designation immediately follows.
TIME	Immediately following is the time or date-time group of the message.
TO	The addressees whose designations immediately follow are to take action on this message.
UNKNOWN STATION	The identity of the station with which I am attempting to establish communication is unknown.
VERIFY	Verify entire message (or portion indicated), with originator and send correct version. (Use only with discretion of or by the addressee to whom the questioned message was directed.)
WAIT	I must pause a few seconds.
WAIT OUT	I must pause longer than a few seconds.
WILCO	I have received your message, understand it, and will comply. (To be used only by the addressee.) (Since the meaning of ROGER is included in that of WILCO, the two pro-words are never used together.)
WORD AFTER	The word of the message to which I refer is that which follows _____.
WORD BEFORE	The word of the message to which I refer is that which precedes _____.
WORDS TWICE	Communication is difficult. Transmit each phrase (or each code group) twice. (This pro-word may be used as an order, request, or information.)
WRONG	Your last transmission was incorrect. "The correct version is _____."

Pro-Signs

Introduction

When you address an envelope to mail a letter, you write two letters to represent the state in the address. You may also use the letters "ST" or "AVE" to represent the words street and avenue, respectively. Abbreviations are used in the same way for filling out message books (except in the text of a message) and radio circuit logs. A single letter or group of letters, which represents a pro-word, is a pro-sign.

Pro-Sign Meanings

There are almost as many pro-signs as there are pro-words. Some pro-signs are listed below.

Pro-Sign	Pro-Word	Pro-Sign	Pro-Word
AA	All after	K	Over
AB	All before	P	Priority
— BT	Break	G	Read back
C	Correct	R	Roger
EEEEEEEEE	Correction	— IMI	I say again
EEEEEEEEE — AR	Disregard this transmission out	-R-	Routine
F	Do not answer	SVC	Service
IX	Execute to follow	— — — HM HM HM	Silence, silence, silence
XMT	Exempt	DE	This is
-Z-	Flash	TO	To
FM	From	— AA	Unknown station
GR	Groups	J	Verify
GRNC	Group no counts	— AS	Wait
-O-	Immediate	— — — AS AR	Wait out
IX	Immediate (action)	WILCO	Wilco
INFO	Information	WA	Word after
B	More to follow	WB	Word before
— AR	Out		

Tactical Field Message Book

Introduction

The tactical field message book is a three part compact booklet (yellow canary) used for transmitting and recording messages to include:

- Heading
 - Text
 - Ending
-

Heading

The heading contains the following information:

- Who is it from?
 - Who it addresses?
 - When message was written?
 - How much time to take action on the instructions?
-

Text

The text contains the following information:

- Classification
 - Exact instructions and details of the message
 - “Word for word”
-

Ending

The ending:

- “Over (K)”
 - “Out (AR)”
-

Usage

Tactical Field Message books are established to

- Circulate a “hard copy” message within that immediate command
 - Ensure the inclusion of all necessary information
 - Serve as a record
-

Outside and Inside Coverings

The Tactical Field Message Book has physical characteristics.

Part	Description
Front cover (outside) contains	<ul style="list-style-type: none">• Beige in color• Phonetic alphabet• Space for assigning the classification of the message book• Precedence table• Morse code table
Front cover (inside) contains	<ul style="list-style-type: none">• Beige in color• Instructions for preparing a field message• Abbreviations table• Space provided for note taking

Continued on next page

Tactical Field Message Book, Continued

Outside and Inside Coverings, continued

Part	Description
Back cover (when opened) contains	<ul style="list-style-type: none"> • Beige in color • A sample message for preparing/copying messages • As a protective insert in preparing/copying • Folds open, to be inserted between message parts
Interior pages	<ul style="list-style-type: none"> • Yellow in color • Can reproduce by pressing on two or more pages to make carbon copies (The back folding page will block extra copies)

Message Sheet

The message sheet below is taken from NAVMC 000694 (NSN 0109-LF-063-0200). The reference numbers are explained on the following page.

ZPW _____			
Z O P R (1)	DTG (COMM USE) (2)	FM: (3)	
TO: (4)			
BT (5)	TOPSEC	SECRET	CONF UNCLAS (6)
(7)			
RELEASING OFFICERS SIGNATURE (8)		TOR/TOD: (9)	PAGE: (10)
			____ OF ____

Continued on next page

Tactical Field Message Book, Continued

Reference Numbers

The following information explains the tactical field message book. The parts are numbered and described.

Part	Description
(1) Precedence	-Z-, -O-, -P-, -R- Informs the operator of the speed in which the message must be handled: a) FLASH -Z- <u>As fast as humanly possible.</u> b) IMMEDIATE -O- 30 minutes to 1 hour. c) PRIORITY -P- 1 hour to 3 hours. d) ROUTINE -R- 3 hours to 6 hours.
(2) Date time Group	Is made up of 4 elements: (EX): <u>15 / 1223Z / NOV / 01</u> (element) 1 2 3 4 <u>1ST element:</u> 2-digit number that represents the date (day of the month). <u>2ND element:</u> 4-digit number that represents the time of day in hours and minutes, as well as a time zone designator. <u>3RD element:</u> Represents the month of the year (always a 3 letter abbreviation). <u>4TH element:</u> Represents the year (always a 2 digit number that represents the last 2 numbers in the year).
(3) FM (from)	Originator of the message.
(4) TO	Identifies the action addressee. Included on this line will be the INFO addressee and the XMT addressee.
(5) First BT	To separate the heading from the text.
(6) Classification	Top Secret, Secret, Confidential, Unclassified identifies the classification of the message.
(7) Multiple lines for the text	Provided for the text of the message.
(8) Releasing officer signature	When signed, the message is then authorized for release. At the bottom left of the message form is a signature block for the releasing officer, message endorsements (Time of Receipt TOR/Time of Delivery TOD) and the number of pages for a long message.
(9) TOR/TOD	<u>TOR Time Of Receipt:</u> What time did I receive the message? Placed on all incoming messages by the operator receiving the message. It consists of three sections: (EX): <u>Time(1) /Initials(2)/ Frequency(3) (TIF)</u> 15 1223Z NOV 01 / JMP / 50.950 MHz <u>TOD Time Of Delivery:</u> A TOD is placed on all outgoing messages by the operator sending it. It consists of four boxes or sections. <u>Upper left:</u> Contains the call sign of the station(s) called, plus any routing instructions. <u>Upper right:</u> Contains the frequency of the net that the message was sent on. <u>Lower left:</u> Contains the operator's initials. <u>Lower right:</u> Contains the date and time that the message was sent. If multiple stations are receiving the same message, they will be listed in the order in which they were sent. (EX): <u>S / H Station / Hertz</u> <u>I / T Initials / Time</u>
(10) Page	For page number ____ of ____.

Notes: If additional space is required for drafting or copying a message (part 7), you may use more than one message sheet.

A space is provided on the front cover of the message book for assigning the highest classification within the booklet. If book is "UNCLAS" only, then the book will be classified as "UNCLAS."

Message Categories and Common Pro-Signs

Precedence

There are seven pro-signs that you need to know.

- These four message precedence categories are effective for U.S. military use
 - Flash “Z”
 - Immediate “O”
 - Priority “P”
 - Routine “R”
- The common remaining pro-signs are
 - “K”
 - “AR”
 - “BT”

Explanation

Sign	Explanation
Pro-Sign “Z” (Flash)	<p>This precedence is reserved for initial enemy contact, messages and operational combat messages of extreme urgency, “brevity is mandatory.”</p> <p>Situations:</p> <ul style="list-style-type: none"> • Initial enemy contact reports • Messages recalling or diverting friendly aircraft about to bomb targets unexpectedly occupied by friendly forces • Messages taking emergency action to prevent conflict between friendly forces • Warning of imminent large scale attacks • Extremely urgent intelligence messages • Messages containing major strategic defense decisions of great urgency <p>Handling communication personnel:</p> <ul style="list-style-type: none"> • “Flash” messages will be hand-carried, processed, transmitted, and delivered in the order received and ahead of all other messages. • Messages of lower precedence will be interrupted until the handling of the FLASH message is completed. • For automatic systems, interruption of lower precedence messages is not provided; adequate procedures must be prescribed to ensure that FLASH messages are not delayed. <ul style="list-style-type: none"> • Time objective is less than 10 minutes.

Continued on next page

Message Categories and Common Pro-Signs, Continued

Explanation
continued

Sign	Explanation
Pro-Sign "O" (immediate)	<p>This precedence is reserved for messages relating to situations that gravely affect the security of U.S./Allied forces or population, and requiring immediate delivery to the addressee(s).</p> <p>Situations:</p> <ul style="list-style-type: none"> • Amplifying report of initial enemy contact • Reports of unusual major movements of military forces of foreign powers in time of peace or strained relations • Messages reporting enemy counterattack or requesting canceling additional support • Attack orders to commit a force in reserve without delay • Messages concerning logistical support of special weapons when essential to sustain operations • Reports of widespread civil disturbance • Reports of warning a grave natural disaster (earthquake, flood, storm, etc.) • Request for, or directions concerning, distress assistance • Urgent intelligence messages <p>Handling by communication personnel:</p> <ul style="list-style-type: none"> • Immediate messages are processed, transmitted, and delivered in the order received and ahead of all messages of lower precedence. • Messages of lower precedence will be interrupted until handling of the immediate message is completed. • In automatic systems the interruption of lower precedence messages are not provided and adequate procedures are to establish that IMMEDIATE messages are not delayed. • Time objective is 30 minutes.
Pro-Sign "P" (PRIORITY)	<p>This precedence is reserved for messages that require expeditious action by the addressee(s) and/or furnish essential information for the conduct of operations in progress when ROUTINE precedence will not suffice.</p> <p>Situations:</p> <ul style="list-style-type: none"> • Situation reports on position from where attack is impending or where fire, or air support, will soon be placed. • Orders to aircraft formations or units to coincide with ground or naval operations. • Aircraft movement reports (e.g., messages relating to requests for news of aircraft in flight, flight plans, cancellation messages to prevent unnecessary search/rescue action.) • Messages concerning immediate movement of naval, air, and ground forces.

Message Categories and Common Pro-Signs, Continued

**Precedence,
continued**

Sign	Explanation
Pro-Sign "P" (Priority)	<p>Handling by communications personnel:</p> <ul style="list-style-type: none"> • Priority messages are processed, transmitted, and delivered in the order received and ahead of all messages of Routine precedence. • Routine messages being transmitted should not be interrupted unless they are extra long and a very substantial portion remains to be transmitted. • Priority messages should be delivered immediately upon receipt at the addressee destination. • Time objective is 1 to 3 hours.
Pro-Sign "R" (ROUTINE)	<p>This precedence is to be used for all types of messages which justify transmission by rapid means unless of sufficient urgency to require a higher precedence. Routine is the lowest precedence.</p> <p>Situations:</p> <ul style="list-style-type: none"> • Messages concerning normal military operations, programs, and projects • Messages concerning stabilized tactical operations • Operational plans concerning projected operations • Periodic or consolidated intelligence reports • Troop movement messages, except when time factors dictate use of a higher precedence • Supply and equipment requisition and movement messages, except when time factors, dictate use of a higher precedence • Administrative, logistic and personnel matters • Time objective is 3 to 6 hours

Common Pro-Signs These remaining pro-signs are also seen in field messages.

Sign	Explanation
Pro-Sign "K," "AR," and "BT"	<ul style="list-style-type: none"> • Over (K)-Ends the section of the transmission, but does not end the transmission • Out (AR)-Terminates the transmission • Break (BT)-Used to continue long sentences during a single transmission <p>The ending is either over (K) or out (AR).</p>

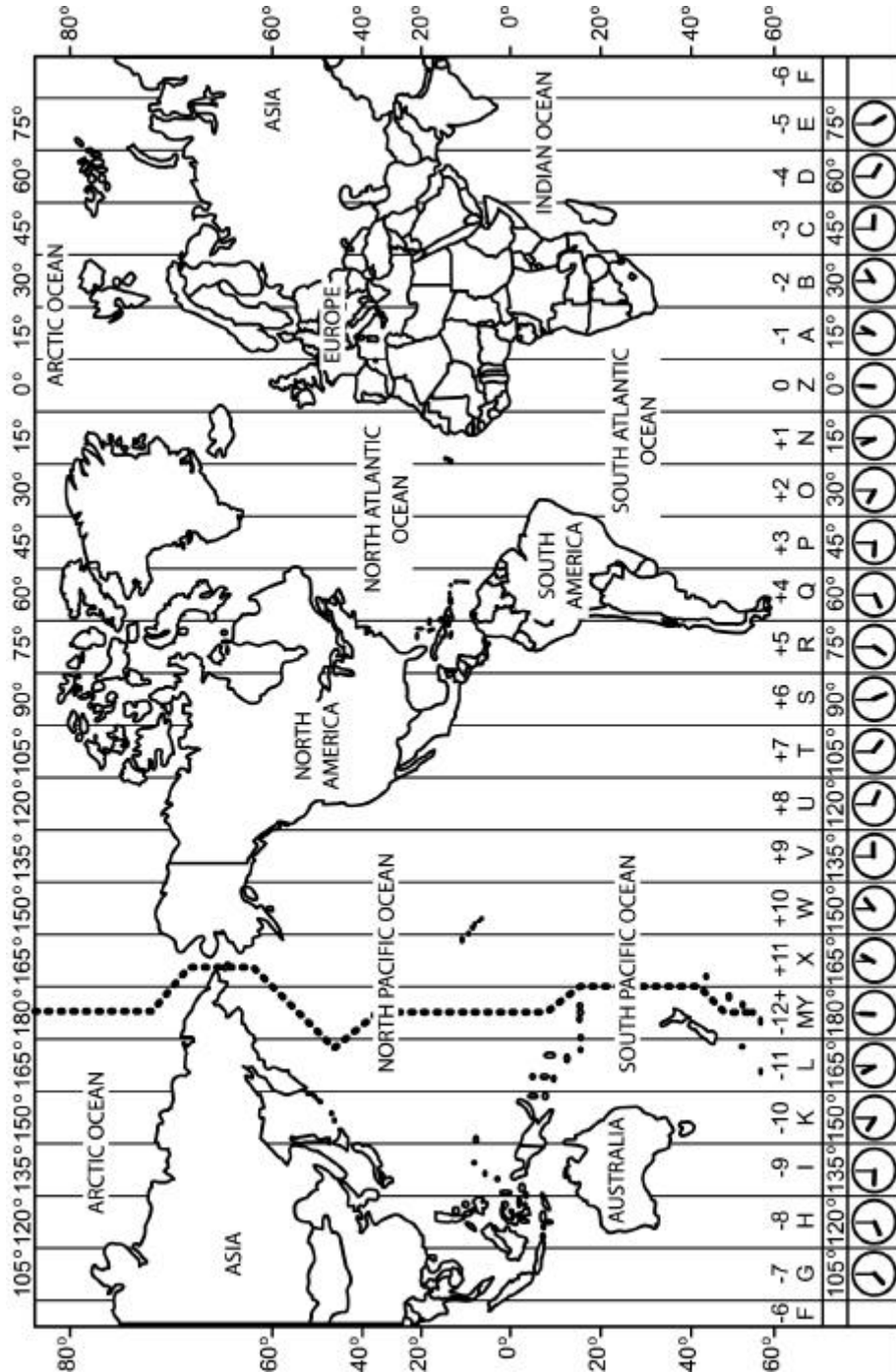
Note: Always remember that the text of a message must be written exactly as it was received. Pro-signs and other abbreviations are not to be used in the text.

Date Time Group (DTG)

Introduction

A Date Time Group (DTG) is written on each message. It contains the date (two-digits), time (four-digits), time zone (single letter), month (first three letters), and the year in that order. The time zone is shown below. “R” represents the zone that you are located in.

If you are writing a field message in November and it is 0600 in the morning on the 15th day of the month in 2001 at Camp Lejeune, North Carolina. Your DTG is 150600RNOV01.



Security Classifications

Types

There are four security classifications that can be assigned to a message form titled Top Secret, Secret, Confidential, and Unclassified.

Classifications	Description
Top Secret	<ul style="list-style-type: none">• National security information or material requires the highest degree of protection.• This classification is exceptionally grave damage to national security.• Examples of exceptionally grave damage include<ul style="list-style-type: none">• Harm against the United States or its allies.• Disruption of foreign relations.• Compromise of vital national defense plans.• Complex cryptologic and communications intelligence systems.• This classification should be used with the utmost restraint.
Secret	<ul style="list-style-type: none">• National security information or material requires a substantial degree of protection.• This classification is expected to cause serious damage to national security.• Examples of serious damage include<ul style="list-style-type: none">• Disruption of foreign relations significantly affected• Significant impairment of a program or policy• Revelation of significant military plans or intelligence operations• The secret classification should be used sparingly.
Confidential	<ul style="list-style-type: none">• National security information or material requires protection.• This classification is expected to cause damage to national security.
Unclassified	<ul style="list-style-type: none">• Information does not require any increased protection.• Cannot result in any harm to the United States of America if it falls into the hands of an unauthorized person.

Field Reports

Introduction

The three most common radio field reports you will have on a radio net are

- Situation report (SITREP)
- Spot report (SPOTREP)
- Intelligence report (TELLREP)

Situation Report (SITREP)

The situation report

- Is a periodic report
- Covers current situation
- Includes everything that has happened since your last transmitted report

Part	Function
A	Date-time group (DTG)
B	Friendly coordinates: (all) coupled, do not compromise.
C	Activities conducted, Complete narrative. Include previously sent SPOTREP by number; cover period since last SITREP.
D	Activities planned: (next 4 hours) include patrols, ambushes, actions, FRAG orders, etc.
E	CP/Helo LZ: Don't compromise; couple coordinates.
F	Logistical requirements: food, ammo, water, etc. (next 4 hours).
G	Personnel losses: For period covered. Refer to previous SPOTREP and CASREPS, number. Periodic report that reflects the current situation since the last SITREP. May reference other reports sent since last SITREP.

Note: Always remember, when sending friendly coordinates over an uncovered radio, they must be coupled (encoded). When preparing line "C," any activities not previously covered by SPOTREPS must be fully explained. Previous SPOTREPS need only the number of the report.

Spot Report (SPOTREP)

The spot report is similar to an intelligence report with the only difference in line "D." Line "D" in the spot report is a description of what actually happened.

Note: These **formats are only guides and may change** from unit to unit in accordance to the local standard of procedure (SOP).

Line	Required Information
A	Call sign of reporting unit
B	Date time group
C	1. Friendly position (coupled) 2. Enemy position (in the clear)
D	Incident: (what happened?)
E	Action: (taken or being taken)
F	Friendly KIA (CASREP must follow)
G	Friendly WIA (CASREP must follow)
H	Friendly MIA (rank, initials, last 4-digits of SSN, circumstances when last seen)
I	Enemy KIA (confirmed only)
J	Enemy captured
K	Suspects detained (type, i.e., women, children, etc.)
L	Weapons captured
M	Number and type of equipment and documents captured or destroyed

Continued on next page

Field Reports, Continued

Spot Report (SPOTREP), continued

This is an initial report used to tell

- What happened?
 - Where?
 - Why?
 - How?
 - When?
 - To whom it happened?
-

Intelligence Report (TELLREP)

An intelligence report is normally used for initial enemy sightings or in reporting other observations. Line “D” is filled in with SALUTE for an intelligence report.

Line	Required Information
A	Call sign of reporting unit
B	Date time group (DTG)
C	Friendly position (coupled)
D	<u>S</u> IZE of enemy unit <u>A</u> CTIVITY of enemy unit <u>L</u> OCATION of enemy units <u>U</u> NIT <u>T</u> IME of each activity noted <u>E</u> QUIPMENT used or carried by enemy
E	Action being taken or planned
F	Friendly KIA
G	Friendly WIA
H	Friendly MIA
I	Enemy KIA
J	Enemy captured
K	Suspects detained
L	Weapons captured
M	Number and type of equipment/documents captured
N	Use same format as SPOTREP and substitute SALUTE for format line D

Note: An intelligence report (TELLREP) is normally used for initial enemy sightings or reporting other observations.

Request for Fire Support

Introduction

The types of requests are shown below

- Close air support (CAS)
 - CAS check-in briefing form
 - Joint tactical air strike request (JTAR)
 - Naval gun fire (NGF)
 - Artillery/mortar fires
-

Close Air Support (CAS)

Introduction

The occasions when CAS could be used effectively before calling for fire support you should know

- Advantages
- Requirements
- CAS briefing form
- 9-Line

Advantages

Combined arms will have an effect on the enemy to the point of:

- Attacking aircraft can hit targets that other supporting arms cannot.
- Increased range of strike.
- Allowing the ability to engage targets in defilade.
- Delivery weapons of greater destructive power than other supporting arms to destroy fortified positions and targets.
- Increase the desired effect (destruction) of the target.

Requirements

Effective CAS requires the following conditions:

Condition	Description
Air superiority	Necessary to ensure success for attack aircraft engaged in CAS.
Suppression of Enemy Air Defenses (SEAD)	CAS aircraft are vulnerable to enemy surface to air missiles/anti aircraft artillery (SAM/AAA). Enemy air defense weapons and their command and control systems must be neutralized, or effectiveness reduced, either before or during a CAS mission.
Marking	Accurate and safe CAS generally requires target marking. Target marking may be accomplished by a forward air controller (FAC) brief description, or by use of visual aids such as smoke or by laser designation.
Favorable Weather	Favorable visual conditions are generally necessary for effective CAS since attack tactics normally require observation of the target.

CAS Briefing Form

To receive close air support, you or your unit's forward air control party (FAC) must call in a tactical air request (TAR).

- If approved, an aircraft appropriate for the mission will be designated.
- Verify the frequency to be used.
- A CAS briefing card shown below is used to control the close air support mission.

CAS CHECK-IN BRIEF FORM (Aircraft Transmits to Controller)	
Aircraft: “ _____ this is _____ ”	_____
(Controller Call Sign)	(Aircraft Call Sign)
1. Identification/ Mission Number: “ _____ ”	_____
Note: Authentication, appropriate response suggested here to show brevity and verify security (“as fragged” or “by exception”).	
2. Number and Type of Aircraft: “ _____ ”	_____
3. Position and Altitude: “ _____ ”	_____
4. Ordnance: “ _____ ”	_____
5. Time on station (TOS): “ _____ ”	_____
6. Abort Code: “ _____ ” (If applicable)	_____
Remarks: _____	(NVG, LST, special mission info)

Continued on next page

Close Air Support (CAS), Continued

“9 Line”

The 9-Line form is used to control the CAS mission.

CAS MULTI-MISSION “9 LINE” FORM

Aircraft on station for control “Standby for a nine line...”	A/C CS _____	A/C CS _____	A/C CS _____
	MSN# _____	MSN# _____	MSN# _____
	#/TYPE _____	#/TYPE _____	#/TYPE _____
	POS _____	POS _____	POS _____
	ALT _____	ALT _____	ALT _____
	ORD _____	ORD _____	ORD _____
	TOS _____	TOS _____	TOS _____
	ABT Code _____	ABT Code _____	ABT CODE _____
	Remarks _____	Remarks _____	Remarks _____
	_____	_____	_____
_____	_____	_____	
1. IP/ BP			
2. Heading (degrees)	L / R	L / R	L / R
3. Distance (nautical miles/ meters)			
4. Target elevation (feet, mean sea level)			
5. Target description (general)			
6. Target location (grid)			
7. Mark (code/LTL)			
8. Friendlies (Dir/ Dist)			
9. “Egress...” (Dir & Dest)			
Remarks restrictions (FAH OR ALT) Threats, ACA (SEAD GTL)			
TOT / TTT			
Amplifying information (as required)			

Continued on next page

Close Air Support (CAS), Continued

CAS“9 Line” Instructions

The instructions listed below will aid in the execution of a “9 Line“ mission.

Part	CAS MULTI-MISSION “9 LINE” FORM INSTRUCTIONS
1	IP/BP: _____ IP (Initial point) or BP (Battle position.) For fixed-wing aircraft, the starting point for the run to the target. For rotary-wing aircraft, the area from which targets will be engaged.
2	Heading: _____ Offset: L _____ R _____ Given in degrees magnetic. For fixed-wing aircraft this is the HDG from the IP to TGT given in degrees magnetic. For rotary-wing aircraft, this is the heading from the center of the battle position to the target. An offset is given when needed to restrict attack aircraft maneuvering due to enemy, WX, terrain, friendly fires, etc. or to control attack geometry. Offset direction indicates the side of the IP/BP target line the attacking aircraft can maneuver to position itself for the attack. However, an aircraft can proceed directly from the IP to target on the magnetic heading given in line 2 provided it does not violate the offset direction, if one is given.
3	Distance: _____ From the IP/ BP to the target. For fixed-wing aircraft the distance is given in nautical miles (NM) and should be accurate to a tenth of a NM. For example, 12.3 NM would be transmitted as “twelve point three.” For the rotary-wing aircraft, this distance is from the center of the battle position to the target expressed in meters and should be accurate to 5 meters.
4	Target elevation: _____ Expressed in feet above Mean Sea Level (MSL).
5	Target description: _____ The target description should be specific enough for the aircrew to recognize the target. The target should be described accurately and concisely. The description aids the aircrew in anticipating visual cues for target acquisition.
6	Target location: _____ The location of the target can be given in several ways; 6-digit UTM grid coordinates, latitude and longitude, navigation aid fix, or visual descriptions from a conspicuous reference point are all acceptable. Because multiple grid coordinate system datum are in use, the specific datum being referenced should be specified in the JTAR and, if required, clarified by the brief. Terminal controllers should include the 100,000-meter grid identification. For area targets, use the center of the area or the location of the greatest concentration of enemy. For linear targets use the ends of the target array.
7	Mark type: _____ Code: _____ LTL: _____ Type of mark to be employed – white phosphorous, illumination, IR pointer, laser, etc. If a laser designator is being employed, the four-digit laser code and the laser-to-target line are stated.
8	Friendlies: _____ The location of friendly forces nearest the target is given. This position is referenced from the target—from the target to the position—and is expressed in a cardinal or semi-cardinal direction and a distance in meters. If the friendly position is marked, identify the type of mark.
9	Egress: _____ The cardinal or semi-cardinal direction to be used when departing the target and control points to use when exiting the terminal control arena. Unlike all other lines of the brief, the word “egress” is transmitted before giving egress instructions.
Remarks	<p>The following information may be included if applicable:</p> <ul style="list-style-type: none"> • Troops in contact or danger close • Airspace coordination: final attack heading (FAH) or altitude restrictions • Threat • Suppression of enemy air defense (SEAD) support in effect • Active gun target lines • Ordnance requested • Hazards • Weather

Continued on next page

Close Air Support (CAS), Continued

CAS/“9 Line” Instructions, continued

Part	CAS Multi-Mission “9 Line” Form Instructions
TOT/TTT or TTT	<p>The terminal controller will assign a TOT (time-on-target) or TTT (time-to-target).</p> <ul style="list-style-type: none">• TOT. (GPS default method) Time-on-target is the specific time aircraft delivered ordnance will hit the target. The timing is based on a synchronized clock; GPS is the standard that is used by all supporting arms agencies.• TTT. Time-to-target uses a countdown timer rather than a universal clock. The terminal controller states the number of minutes and seconds to elapse from the time the countdown is started to the time aircraft delivered ordnance hits the target; the countdown is started with the word “HACK.” For example, if the terminal controller were to say “six plus zero zero (6+00)...HACK,” ordnance should impact the target six minutes after the “HACK” was transmitted. Any other supporting arms/ ground elements involved in the mission must coordinate their timing from this countdown and “HACK.”
Notes	These pertain to the CAS mission at hand.

Joint Tactical Airstrike Request (JTAR)

JTAR Form

This form is standard for use in conducting air strikes. There are three sections of the Joint Tactical Airstrike Request (JTAR). Instructions are on the following pages.

JOINT TACTICAL AIRSTRIKE REQUEST (JTAR)			
DD Form 1972 (REVISED) 15 NOV 1994, Supersedes DD Form 1972 Apr 1975 Joint Pub 3-09.3, Appendix C for preparation instructions.			
SECTION I - MISSION REQUEST			DATE:
1. UNIT CALLED:	THIS IS:	REQUEST NUMBER:	SENT TIME: BY:
2. PREPLANNED: (A.) PRECEDENCE ___ (B.) PRIORITY ___ IMMEDIATE: (C.) PRIORITY _____			SENT: TIME: BY:
3. TARGET IS/NUMBER OF:			
(A.) PERS IN/OPEN	(B.) PERS DUG IN	(C.) WPNS/MG/RR/AT	(D.) MORTARS/ARTILLERY
(E.) AAA ADA	(F.) ROCKETS/ MISSILE	(G.) ARMOR	(H.) VEHICLES
(I.) BLDGS	(J.) BRIDGES	(K.) PILLBOX/BUNKER	(L.) SUPPLIES/ EQUIPMENT
(M.) CENTER (CP, COM)	(N.) AREA	(O.) ROUTE	(P.) MOVING N/S/E/W
(Q.) REMARKS ; _____			
4. TARGET LOCATION: (A.) _____ (B.) _____ (C.) _____ (D.) _____ (COORDS) (COORDS) (COORDS) (COORDS) (E.) TGT ELEV _____ (F.) SHEET NO. _____ (G.) SERIES _____ (H.) CHART NO. _____			CHECKED: BY:
5. TARGET TIME/DATE: ASAP _____ (B.) NLT _____ (C.) AT _____ (D.) TO _____			
6. DESIRED ORD/RESULTS: (A.) ORDNANCE _____ (B.) DESTROY _____ (C.) NEUTRALIZE _____ (D.) HARASS/INTERDICT _____			
7. FINAL CONTROL: (A.) FAC/RABFAC _____ (B.) CALL SIGN _____ (C.) FREQ _____ (D.) FIX/CONT PT _____			
8. REMARKS: 1. IP _____ 6. TGT LOCATION _____ 2. HDG _____ DGR MAG FSET L/R 7. MARK TYPE _____ CODE _____ 3. DISTANCE _____ 8. FRIENDLIES _____ 4. TGT ELEVATION _____ FT MSL 9. EGRESS _____ 5. TGT DESCRIPTION _____			

Continued on next page

Joint Tactical Airstrike Request (JTAR), Continued

JTAR Form,
continued

JOINT TACTICAL AIRSTRIKE REQUEST (JTAR)			
SECTION II – COORDINATION			
9. NGF	10. ARTY	11. AIL/G-2/G-3	
12. REQUEST: (A.) _____ APPROVE (B.) _____ DISAPPROVE	13. BY:	14. REASON FOR DISAPPROVAL:	
15. AIRSPACE COORDINATION AREA (ACE): (A.) IS NOT IN EFFECT _____ (B.) NUMBER _____	16. IS IN EFFECT (A.) FROM TIME _____ (B.) TO TIME _____		
17. LOCATION: (A.) _____ (B.) _____ (FROM COORDS) (TO COORDS)	18. WIDTH (IN METERS):	19. ALTITUDE/VERTEX: (A.) _____ (B.) _____ (MAX/VERTEX) (MINIMUM/VERTEX)	
SECTION III – MISSION DATA			
20. MISSION NO:	21. CALL SIGN:	22. NO. AND TYPE AIRCRAFT:	23. ORDNANCE:
24. EST/ACT TAKEOFF:	25. EST TOT:	26. CONT PT/RDNVS (COORDS/NAVAID FIX)	27. INTIAL CONTACT:
28. FAC/ASRT/TAC(A) CALL SIGN FREQ:	29. Restrictive fire/Air plan (SEE 15-19):	30. TGT DESCRIPTION:	31. TGT COORD/ ELEV:
32. Battle damage assessment (BDA) report (USMTF INFLTREP): Line 1/ Call sign _____ Line 4/Location _____ Line 2/ Mission number _____ Line 5/TOT _____ Line 3/ Request number _____ Line 6/Results _____ Mission remarks/Information:			
			TUOC
			CRC
			TACP
			ASRT

Continued on next page

Joint Tactical Airstrike Request (JTAR), Continued

**JTAR Form
Instructions**

JOINT TACTICAL AIRSTRIKE REQUEST INSTRUCTIONS	
SECTION I - MISSION REQUEST	
Line Title and Elements	Explanation
<p>1. Unit called</p> <p>This is</p> <p>Request number</p> <p>Sent</p>	<p>Identifies the unit designation/call sign/pre-assigned number.</p> <p>Identifies the request originator by unit designation/call sign/pre-assigned number.</p> <p>For preplanned missions, indicates the originator's request number in series. For immediate missions, this number is assigned by the ASOC/DASC.</p> <p>Indicates the time and the individual who transmitted the request.</p>
<p>2. (Mission categories)</p> <p>Preplanned:</p> <p>A. Precedence</p> <p>B. Priority</p> <p>Immediate:</p> <p>C. Priority</p>	<p>For preplanned requests, enter precedence (block A).</p> <p>Or priority (block B). Precedence is stated numerically in descending order of importance, as determined by the requester. Priority is expressed in the following paragraphs.</p> <p>For immediate requests, enter priority (block). A precedence entry is not required for immediate requests because, by definition, all immediate requests have a precedence of 1.</p> <p>Use the numerical designation below to determine priority (e.g., define the tactical situation) for preplanned (block B) or immediate (block C):</p> <ol style="list-style-type: none"> 1. Emergency: Targets that require immediate action and supersede all other categories of mission priority. 2. Priority: Targets that require immediate action and supersede routine targets. 3. Routine: Targets of opportunity. Targets that do not demand urgency in execution.
<p>3. Target is/</p>	<p>Describes the type, approximate size, and mobility of the target to be attacked. It is necessary to specify, even if a rough simulate, the number of targets (i.e., 10 tanks) or the size of the target area (i.e., personnel on a 500-meter front). Otherwise planners cannot accurately determine what force is required aircraft numbers/type and ordnance amount/type.</p>

Continued on next page

Joint Tactical Airstrike Request (JTAR), Continued

JTAR Form
Instructions,
continued

JOINT TACTICAL AIRSTRIKE REQUEST INSTRUCTIONS	
SECTION I - MISSION REQUEST	
Line Title and Elements	Explanation
4. Target A. Coordinates B. Coordinates C. Coordinates D. Coordinates E. Target Elevation F. Sheet Number G. Series H. Chart Number Checked (right hand side of form)	Locates the target by using the Military Grid Reference System Location (MGRS) as prescribed for the area concerned. Locates a point target or starting point. When used together with A, provides from _____ to _____ coordinates. When used together with A and B, provides a route. When used together with A through C, provides a route or describes a target area. Target elevation in feet above sea level. Self-explanatory. Self-explanatory. Self-explanatory. Indicates with whom target information has been cross-checked.
5. Target Time/Date:	Self-explanatory.
6. Desired Ordnance/Results A. Ordnance B. Destroy C. Neutralize D. Harass/Interdict	Indicates the requester's desired results. This is essential information for the planner and must be carefully considered by the requester. Desired ordnance. Self-explanatory. Self-explanatory. Self-explanatory.
7. Final Control A. FAC/RABFAC B. Call Sign C. Freq. D. Control Point	Identifies the final controller (FAC, FAC (A), etc.) who will conduct the briefing and control the release of the ordnance. Transmits the type of terminal control. Call sign of terminal controller. Recommended TAD frequency usable on the FEBA. Military grid coordinates and/or navigation aid (NAVAID) fix of a control point that is the furthest limit of the attack aircraft's route of flight before control by the final controller.
8. Remarks 1. IP/BP _____ 2. Heading _____ MAG: Offset Left/Right 3. Distance _____ 4. Target elevation _____ Feet MSL 5. Target description _____ 6. Target location _____ 7. Mark type _____ Code _____ 8. Friendlies _____ 9. Egress _____	Allows incorporation of briefing not included elsewhere in the request. Enter data for the standard CAS brief.

Continued on next page

Joint Tactical Airstrike Request (JTAR), Continued

JTAR Form
Instructions,
continued

JOINT TACTICAL AIRSTRIKE REQUEST INSTRUCTIONS	
SECTION II – COORDINATION	
Line Title and Elements	Explanation
9. NGF	Now known as NSFS
10. Artillery	Artillery coordination.
11. AIO/G-2/G-3	Air Intelligence Officer, G-2, G-3, or other service equivalent coordination.
12. Request: A. Approved B. Disapproved	Self-explanatory
13. By	Indicates the individual who approved or disapproved the request.
14. Reason for Disapproval	Self-explanatory.
15. Airspace Coordination Area (ACA) A. Is Not In Effect B. Number	The ACA establishes airspace that is reasonably safe from friendly, surface delivery, non-nuclear fires. The ACA provides a warning to aircraft of the parameters of surface-delivered fire in a specific area. Self-explanatory. A plan number or code name is issued, as appropriate.
16. Is in Effect A. From Time ____ B. To Time ____	Establishes the time period that the applicable ACA plan will be in effect. Beginning of time period. End of time period.
17. Location: A. From Coordinates B. To Coordinates	Grid coordinates of the start of the ACA's centerline Grid coordinates of the end points of the ACA's centerline
18. Width (Meters)	Defines the ACA from either side of the centerline.
19. Altitude/Vertex A. Maximum/Vertex B. Minimum/ Vertex	ACA altitude given in feet above MSL. (Use A for Vertex only entry).
20. Mission Number	Indicates mission number.
21. Call Sign	Call sign of mission aircraft.
22. Number and Type Aircraft	Self-Explanatory.
23. Ordnance	Type of ordnance either by code number or actual nomenclature.
24. EST/ACT	Takeoff Estimated or actual time the mission aircraft will take off.
25. EST/TOT	Estimated time on target.

Continued on next page

Joint Tactical Airstrike Request (JTAR), Continued

JTAR Form
Instructions,
continued

JOINT TACTICAL AIRSTRIKE REQUEST INSTRUCTIONS		
SECTION III - MISSION DATA		
Note: Mission data information transmitted to the requesting agency may be limited to those items not included in the request.		
Line Title and Elements	Explanation	
26. Control Point/Rendezvous NAVAID Fix)	Indicates the farthest limit of the attack (Coordinates/ aircraft's route of flight before control by the final controller. Same as Line 7, item D, when designated in the request.	
27. Initial contact	Indicates the initial control of agency is to contact.	
28. FAC/TAC(A)	Call sign and frequency of final CALL SIGN frequency control agency.	
29. ACA	Refer to lines 15 through 19 for this data.	
30. Target Description	Self-explanatory.	
31. Target Coordinates/Elevation	Self-explanatory.	
32. Battle Damage Assessment (BDA) Report.	This optional space is used to record BDA for each mission.	
Line 1./Call sign	Call sign of the reporting aircraft.	
Line 2./Mission number	Mission number of the CAS mission for which results are being reported.	
Line 3./Request number	Requesting unit's request number.	
Line 4./Location	The location of the target then it was attacked.	
Line 5./TOT	The time the aircraft began attack on the target/the time the aircraft completed the mission and departed the target.	
Line 6./Results	The specific results of the mission.(e.g., "10 tanks destroyed, 150 killed in action (KIAs), enemy unit neutralized, mission successful").	
Remarks	Other information appropriate to the tactical situation or as requested.	

Naval Gun Fire (NGF)

Land to Sea

The effect of naval weapons on both land and sea has been a decisive factor in history. It has been effective in controlling and suppressing targets within proximity of land and sea operations.

Limitations

Naval gunfire call for fire is

- Not effective for targets in defilade (flat trajectory).
- Located close to shore due to its range limitations.
- Flat trajectory salvos that are not normally fired over the heads of friendly troops.

Advantages

Naval gun fire has

- Flat trajectory that is ideal for near vertical slope targets and will not halt simultaneous use of close air support.
- Maneuver and ability to move to the most advantageous position to fire.
- Large amount of ammunition on board exempting it from the re-supply problems artillery and aircraft often encounter.
- High rate of fire from naval gunfire can literally pound a target into oblivion.

Guideline

Call for fire form request.

Part	Elements
1	(Identification)(Ship) _____ This is (observer) _____
2	(Warning order) Fire mission target # _____ -OVER-
3	(Target location) Grid _____ Altitude _____ Direction _____ (polar) Direction _____ Distance _____ UP/DN _____ (shift) Direction _____ R/L _____ +/- _____ UP/DN _____
4	(Target description) _____
5	(Method of engagement) a. Type of Adjustment Danger close is called when friendlies are within 750M of the target and direction and distance from target to friendly troops are announced. (Cardinal direction & distance) (first salvo intention) b. Ammunition 1. Projectile HE, WP, Illumination (HE is standard) reduced charge (Full charge standard) (Trajectory) 2. Fuze Quick, Delay, Time, VT in effect (Quick is standard)
6	(Method of fire & control) _____ # of guns _____ # of salvos in effect (one gun standard) (Special instructions) TOT, Coord Illum, Cont Illum, AMC, FFE, Ship adjust, [spotter adjust (standard)]-OVER- SHIP'S REPORT GTL/LOF _____ *True, ready, (TOF) _____, Break, fire-OVER-(when required) Summit _____ Feet first salvo intention (danger close) _____ -OVER-
	Record as target, end of mission, (Survey) _____

Continued on next page

Naval Gun Fire (NGF), Continued

Example

NGF call for fire.

Part	Description
1	Spotter identification "S45 this is H6l, Over."
2	Warning order "Fire mission, TGT#" (Target # is given if known) "OVER,"
3	Target location-Grid 123456, Altitude 15 Ft. Direction 3350 (Altitude is specified in feet or meters.)
4	Target description "Automatic weapon fire from concrete bunker" (this is always required).
5	Method of engagement (example) a. Type of Adjustment Danger close, southeast 300, (danger close is called when friendlies are within 750 meters of the target). Direction and distance from target to friendly troops are also announced. b. Ammunition (1) Projectile: Illumination, white phosphorous (HE is standard) (2) Fuze Time, VT (Quick is standard)
6	Method of fire control* a. Number of Guns "One gun, four salvos" (spotter specifies the number of guns, and number). (SALVO: One shot fired simultaneously of salvos to be fired in by all or part of the guns effect aboard ship.) b. Method of Control "Ship adjust," (Ship adjusts fire) (Again, first round fire spotter adjust for effect is always desired) "Fire for effect, or at my command," "OVER."

NGF, Message to Observer (MTO)

After the request has been sent, the ship will send the spotter the following information:

- GUN-TARGET LINE degrees true north, READY time of flight, ANY CHANCES (the ships gun target line) (time of flight of projectile)
- After "READY, TIME OF FLIGHT" is sent, the spotter must give the command to fire.
- For subsequent adjustments, ship will send "SHOT" when the guns are fired and "SPLASH" five seconds before the round is expected to impact for observation.

Key Terms

The following information explains and defines the naval gun fire.

Word	Definition
High frequency (HF)	Primary means of ship-to-shore radio communications.
Spotter ID and Warning Order	This contains the ship's call sign, your call sign, and the number assigned to your fire mission.
Target location	The grid location must be at least a six-digit grid if it is a point target.
Altitude (ALT)	Same as elevation and you must specify whether you are using feet or meters.
Direction	This is normally given in magnetic degrees or grid degrees to state the direction from you to the target.
Shifting from a Known Point	"From" is a previously recorded target location or a prominent terrain feature, which is followed by the direction, is the same as above. From this information, you add your corrections in meters to put the rounds on the target.
Target Description	Simply explain what the target is to include its degree of protection; for example: reinforced concrete, troops in open; etc.

Continued on next page

Naval Gun Fire (NGF), Continued

**Key Terms,
continued**

Word	Definition
Method of engagement	This is optional information. If nothing is indicated, you will receive high explosive, fuze quick rounds and the first salvos will be aimed directly at the target. If there are any special engagement requirements (mechanical time fuze, variable time fuze, fuze delay, danger close for friendly troops; etc.) you must state them during this portion of the fire mission. "Danger close" is used when troops are 600 meters or closer to the target for artillery and naval gunfire.
Method of fire	This is also optional. If nothing is indicated, you will normally receive main armament, one gun for adjustment and one for fire for effect. If you need anything different, you must specify here.
Pre-firing report from ship to spotter	The gun target line is the azimuth the target in degrees true (you may not want salvos fired directly over your head). "Ready" is the time in seconds from when the gun fires until the round impacts.
Method of control	<p>Optional transmission</p> <ul style="list-style-type: none"> a. "Spotter adjust" -standard method of control and adjustment of fires upon the target. If nothing is to the ship for method of control, you will use spotter adjust. Otherwise you must use one of the following. b. "At my command" -you control all the information for the mission, but the ship will not actually fire until you say "fire". c. "Ship adjust" -you identify the target and the ship will actually be able to see the target and adjust its own fires. d. "Cannot observe" -you are unable to see the target to make adjustments because of target in defilade or you may be on the move. e. "Fire for effect"-state the number of guns and number of salvos from each gun you want directed on the target.

Artillery/Mortar Support

Introduction

The artillery call for fire is similar to the naval gunfire call for fire (CFF). Adjustments are made in the same manner (except for up and down), but the actual call for this is given in transmissions one section at a time.

Advantages

The advantages of Artillery

- Can be fired in all types of weather.
- Can mass fires on a target and shift fires quickly.
- Gives continuous support and initiates surprise fires without adjustment.
- Can be fired on targets in a defilade position.

Limitations

The limitations include

- Artillery cannot support the initial phase of an amphibious operation.
- It has reduced effectiveness during displacements.
- Its logistics support is limited.

Note: Artillery support is normally called by using *VHF* radios.

Fire Direction Control (FDC) Transmission

Actual call for fire form guideline for Artillery support. This information is broken down in to three separate transmissions.

Step	Action
1	Observer Identification "FDC _____ THIS IS (observer) _____"
2	Warning Order "_____, "over" [Adjust fire (AF), fire for effect (FFE), Suppression, Immediate Suppression (IS)/Smoke <u>or</u> Suppression of Enemy Air Defense *(SEAD)] *SEAD CFF WILL BE DISCUSSED SEPARATELY - - - - Break following first transmission for FDC's read back - - - - -
3	Location of Target: employ one of three methods, 1. GRID: "Grid _____, over" <i>or</i> (Coordinates) 2. POLAR: "Direction (mils) _____ Distance _____ up/down _____, over" <i>or</i> 3. SHIFT from known point: "Direction (mils) _____ right/left (meters) _____ add/ drop (meters) _____, over." *If using the shift method of target location, "shift" must be transmitted after the type of mission in the warning order. - - - - - Break following second transmission for FDC's read back - - - - -
4	Target Description "_____"
5	Method of Engagement Type of adjustment: "_____ "Area" or "Precision" (Area is standard) "DANGER CLOSE": predicted impact is within 600 meters of friendly positions. Trajectory: "_____ "High" or "Low" Projectile/ Fuze: "_____/_____" (Low is standard for artillery) • Projectile options: "HE," "DPICM," "WP," "RAP," "ILLUM," or "Smoke" (HE is standard) • Fuze options: "Quick," "VT," "MTSQ" (Quick is standard)
6	Method of Fire and Control "When Ready (WR), At My Command (AMC), Time on Target (TOT), CANNOT OBSERVE, CONTINUOUS ILLUM or COORDINATED ILLUM, over" (when ready is standard) - - - - - Break following third transmission for FDC's read back - - - - -

Continued on next page

Artillery/Mortar Support, Continued

Fire Direction Control (FDC) Transmission, continued

Actual call for fire form guideline for artillery support. This information is broken down in to three separate transmissions.

Notes: Through out the call-for-fire, if the standard is used, nothing needs to be transmitted.

Each of these methods will be discussed in greater detail when you look at the second transmission. Remember when using anything other than a GRID mission, you must communicate this.

Ensure that the universal clock (time hack) is established with all parties involved.

Examples

Mission Type	Description
Grid Mission	"W7, THIS IS D3, ADJUST FIRE, OVER" "GRID 457891, OVER" "Three trucks in convoy, HE/VT in effect, At My Command, OVER"
Polar Plot Mission	"W7, THIS IS D3, ADJUST FIRE POLAR, OVER" "DIRECTION 1650, DISTANCE 3400, OVER" "Machinegun in pillbox, 2 guns fuze Concrete Piercing in effect, OVER"
Shift from a Known Point	"W7, THIS IS D3, ADJUST FIRE SHIFT AF 1001, OVER" "DIRECTION 1650, RIGHT 500, ADD 400, OVER" "Tank company with battalion of infantry assaulting, High Angle, DPICM, two rounds in effect, OVER"

Medical Evacuation (MEDEVAC) Request

Description

A medical evacuation (MEDEVAC) request contains all information needed to dispatch a helicopter to your position. The request simply identifies who you are, where you are, and describes your casualty. A MEDEVAC request will not actually bring the aircraft to your position, land, pick you up, and leave. In conjunction with a MEDEVAC request, you must prepare a Landing Zone/Site Report in the actual landing of aircraft (next page).

MEDEVAC REQUEST	
Mission # _____	
Line	Description
1	Emergency _____ Priority _____ Routine _____
2	Requesting unit call sign _____
3	Date time group _____
4	LZ or pickup coordinates (clear) _____
5	Number of WIA _____ KIA _____ SICK _____ OTHER _____
6	Pickup of doctor or corpsman at LZ or Coord _____ _____
7	Airborne medical assistance required? yes _____ no _____
8	LZ is marked with: Smoke _____ Panels _____ Light _____ Strobe _____
9	LZ Frequency Designator _____ Call sign _____
10	Remarks: Need jungle penetrator?

*Casualty report must follow this request. In any situation, higher headquarters is informed when MEDEVAC is completed.

Landing Zone/Site Report

Landing Zone/Site Report

When you need to land a helicopter for troop pickup/drop, resupply, MEDEVAC, or any other reason, there is certain information that the pilot must have to ensure a safe landing. This information is provided in a landing zone brief.

LANDING ZONE/SITE REPORT	
Step	Action
1	Mission No. _____
2	Location _____ COOR/RAD/DEM _____/_____/_____
3	Unit Callsign _____
4	Frequency PRI UHF _____ FM _____ SEC UHF _____ FM _____
5	LZ Marking _____
6	Wind direction/velocity _____/_____
7	Elevation/size _____/_____ Rule: Position landing point 10 times as far from an obstacle as the obstacle is high (10:1 ratio).
8	Obstacles _____
9	Friendly positions _____ Direction/distance _____/_____
10	Enemy positions: _____ Direction/distance _____/_____
11	Last fire received: _____ Time/ _____/_____
12	Direction of fire/distance _____/_____
13	Clearance to fire: Direction/distance _____/_____
14	Approach/retirement (Recommended) _____/_____
15	Personnel/equipment _____/_____
16	Other _____

Continued on next page

Landing Zone/Site Report, continued

Directions

Each line of the landing zone brief is explained below.

Line	Description																							
1	DASC (Direct Air Support Controller) personnel will assign the mission number to the pilot. Under normal circumstances, infantry units do not use this line.																							
2	Infantry units will usually use grid coordinates to identify their location. Air personnel for radio and electronic navigation aids normally use the RAD and DME.																							
3	Your call-sign																							
4	Self-explanatory																							
5	List the methods of marking the LZ, e.g., smoke, air panels, signal mirrors, lights, etc.																							
6	State the direction from which the wind is coming and the wind speed if known.																							
7	<p>State the elevation of the LZ (air is thinner at higher altitudes) and the LZ size for landing zone requirements.</p> <p><u>Select site for landing zone:</u></p> <p>a. Locate ground area to set up appropriate size landing point. (Note: 1 landing point = 1 helicopter landing space) consider these</p> <ul style="list-style-type: none"> • Height of obstacles around site • Type of helicopter(s) landing (*CH-53E length is 99 ft.) <p>b. Select ground surface with these conditions</p> <ul style="list-style-type: none"> • Firm enough to prevent bogging down • Free of heavy dust, loose snow, logs, rocks, or dry grass • Ground slopes should not exceed 14% or 8 degrees • Choose site that can be identified from the air • Check enemy position/situation to ensure that site, can be secured • Ensure that site is free of major obstacles that might obstruct landings or takeoffs (tall trees, telephone or power lines) <p style="text-align: center;">RECOMMENDED LANDING ZONE DIAMETER (FEET)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">TYPE HELO</th> <th colspan="3">OBSTRUCTION (HEIGHT)</th> </tr> <tr> <th>5-40</th> <th>40-80</th> <th>80+</th> </tr> </thead> <tbody> <tr> <td>UH-1</td> <td>100</td> <td>150</td> <td>200</td> </tr> <tr> <td>AH-1</td> <td>100</td> <td>150</td> <td>200</td> </tr> <tr> <td>CH-46</td> <td>175</td> <td>250</td> <td>350</td> </tr> <tr> <td>CH-53</td> <td>175</td> <td>250</td> <td>350</td> </tr> </tbody> </table>	TYPE HELO	OBSTRUCTION (HEIGHT)			5-40	40-80	80+	UH-1	100	150	200	AH-1	100	150	200	CH-46	175	250	350	CH-53	175	250	350
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8	An obstacle is anything higher or deeper than 1 foot on the LZ or anything near the LZ that may create a hazard to aircraft. Explain where the obstacles are in relation to the LZ.																							
9	State where friendlies are in relation to the LZ.																							
10	State where the enemy is in relation to the LZ.																							
11	Self-explanatory.																							
12	Self-explanatory.																							
13	State the direction and distance the helicopter can fire without endangering friendly troops.																							
14	If at all possible, the approach heading should be into the wind. The retirement or departure heading should be clear of enemy positions.																							
15	Helicopters can safely carry a certain number of personnel and equipment or ascertain amount of weight depending on the type of helicopter. Increased elevation and temperature will decrease the weight capacity of a helicopter. A helicopter must know exactly how many personnel and what type of equipment it will be carrying.																							
16	Anything not previously mentioned which could help the pilot in any way.																							

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Landing Zone/Site Report, Continued

Summary

Part two gave you information for basic voice radio communications. Part three in the series for the *Communication for the FMF Marine* will discuss the environment effects on radio communications.

ENVIRONMENTAL EFFECTS ON



**RADIO COMMUNICATIONS
FOR THE FMF MARINE**

PART THREE

ENVIRONMENTAL EFFECTS ON RADIO COMMUNICATIONS FOR THE FMF MARINE

Overview

Scope Part three (Environmental Effects on Radio Communications) of *Communication for the FMF Marine* will help you to identify and understand radio communications in four geographic environments.

- Arctic
 - Desert
 - Thick vegetation (jungle)
 - Mountain
-

Contents Part three contains the following topics:

Topic	See Page
Overview	3-1
Outside Environmental Effects	3-2
Communications in Arctic-Like Areas	3-3
Communications in Desert Areas	3-7
Communication in Thick Vegetation (Jungle) Areas	3-8
Communication in Mountainous Areas	3-11

Outside Environmental Effects

Introduction

The environment can affect radio communications. There are also other challenges that you may face while communicating in adverse ionosphere conditions and auroral influences.

Ionosphere and Auroral Disturbances

These disturbances occur in any type of climate.

- Normally caused by the solar influence over radio operations.
- Cold weather operations do not cause ionosphere disturbances.
 - These are also known as ionosphere storms, they have a degrading effect on sky-wave propagation.
 - These storms or auroral activity (Northern Lights) can cause complete failure of radio communications.
 - Frequencies can become completely blocked out by static for extended periods of time during storms.
- The density and height of the ionosphere can cause fading, which last anywhere from minutes to weeks.
- These disturbances are difficult to predict. The use of alternate high frequencies and a greater reliance on VHF FM or other means of communications are recommended.

Note: When you use sky-wave high frequency (HF) communications, ensure that you have several widely separated high frequencies to offset auroral disturbances. Reference MCI course 2515H, *Antenna Construction and Propagation of Radio Waves* to further understand HF effects on communications.

Communications in Arctic-Like Areas

Introduction

Radio equipment is limited when operating in extremely cold areas. However, in spite of significant environmental limitations, the radio is the normal means of communications. This map will include the following information:

- Capabilities
 - Man-packing radios
 - Counterpoise
 - Counterpoise diagram
 - Equipment condensation
 - Arctic effects on communication equipment
 - Arctic effects on vehicle mounted radios
-

Capabilities

Cold weather communications have challenges, but overall it remains flexible.

- Vehicle mounted radios can be moved relatively easily to any point that is selected to serve as a command headquarters.
 - Smaller, man-packed radios can be carried to any point that is accessible by foot or aircraft.
-

Man-packing Radios

There are primarily two methods used by ground troops to transport radio equipment in arctic-like areas.

- ALICE pack or a pack board.
 - Sled
-

Arctic Man-packing

Note: Man-packing reduces fatigue and displaces any additional weight. At times, you may find yourself carrying twice your normal load to sustain operations.



Counterpoise

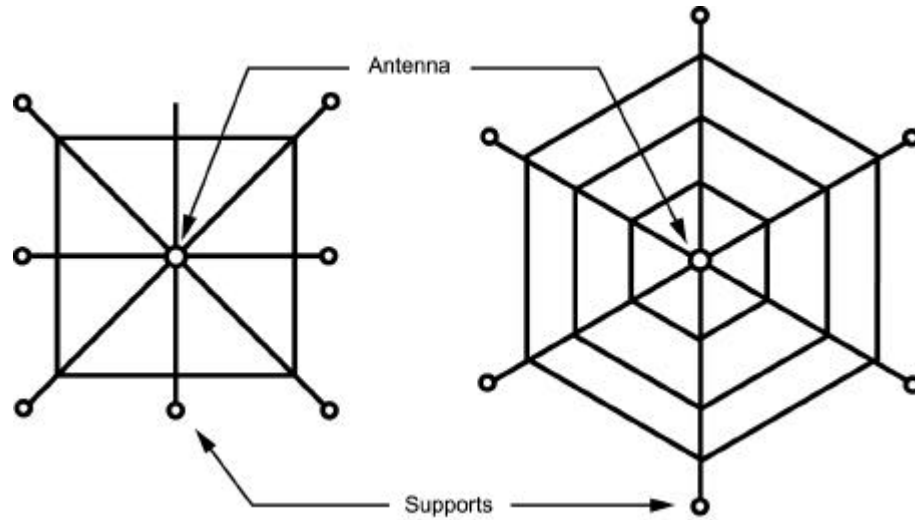
Counterpoise is used to ground equipment on a frozen surface and improve radio wave transmission. Because of permafrost and deep snow, it is difficult to establish a good electrical ground in extremely cold areas. The conductivity of frozen ground is often too low to provide effective ground-wave propagation. To improve your ground-wave propagation, use a counterpoise to offset the degrading effects of poor electrical ground conductivity. When installing a counterpoise, remember to install it high enough above the ground so that it will not be covered by snow.

Continued on next page

Communications in Arctic-Like Areas, Continued

Counterpoise Diagram

A counterpoise will also assist propagation by reflecting the radio wave off the surface of the earth, thus preventing the wave from being totally absorbed into the earth.



Equipment Condensation

When cold equipment is suddenly brought into contact with warm air, moisture will form on the equipment parts. This is called sweating.

Step	Action
Before	When cold equipment is brought into a heated area, it should be wrapped in a blanket or parka to ensure that it will warm gradually to reduce sweating.
During	Equipment must be thoroughly dried before it is taken back out into the cold air or the moisture will freeze forming condensation.

Note: Condensation is the formation of water droplets. Any time you mix water with electrical components you have problems.

Effects on Communication Equipment

Preventive maintenance is a "top" priority. Winterization procedures are not limited to the following tips listed below.

Focus	Operator Actions
Power units	Protect generators from the cold weather, which makes it increasingly difficult to operate and maintain mobile power.
Batteries	Wet and dry cell batteries depend upon the following factors: <ul style="list-style-type: none"> • The load placed on the battery • The particular use of the battery • The degree of exposure to cold temperatures <ul style="list-style-type: none"> • A frozen battery will do you little good • Use a protective shelter or your body heat

Continued on next page

Communications in Arctic-Like Areas, Continued

**Effects on
Communication
Equipment,
continued**

Focus	Operator Actions
Vehicle shock damage	<p>Most synthetic rubber vehicle suspension supports become stiff and brittle in extreme cold.</p> <ul style="list-style-type: none"> • Damage may occur if radios are jolted when mounted on a vehicle. • Inspect radio shock supports frequently.
Winterization	<p>Each radio set and power source has precautions for cold weather operations.</p> <p>Example: Normal lubricants can solidify and must be replaced by recommended arctic lubricants.</p>
Microphones	<ul style="list-style-type: none"> • Moisture can penetrate the cover plate of your handset. • Use standard handsets, and if standard covers are not available, improvise (rubber, cellophane, or a nylon cloth).
Breathing and sweating	<ul style="list-style-type: none"> • The term “breathing” occurs when you turn the radio off and cold air may be drawn to the inside of the handset causing “sweating.” • Hot parts (glass, plastic, and ceramic) cool too rapidly and break. • The use of protective covers will prevent damage.

Note: Cords and cables must be considered fragile because they lose their flexibility in extreme cold.

**Effects on Vehicle
Mounted Radios**

Radios encounter certain problems during winter operations because of their continuous exposure to the elements within a vehicle. The information will help you to improve conditions for operations in cold weather.

Action	Description
Before Vehicle Operations	Make sure the radio power switch is in the off position. This is especially important when vehicles are started by using slave (jumper) cables.
Turning on a radio	<ul style="list-style-type: none"> • Prior to radio operations in the cold, allow an hour for any frost within the radio to thaw. • In addition to an hour, allow 15 minutes before transmitting or changing frequencies.
Connections	A light coat of silicon compound on antenna mast fixtures will keep them from freezing together.
Antenna installation	<p>Actions to take in extreme cold situations are listed below.</p> <ul style="list-style-type: none"> • Carefully handle antenna mast sections and cables because of very low temperatures. • Construct antenna cables overhead to prevent damage from heavy snow and frost. • Nylon rope guys should be used in preference to cotton or hemp. (Nylon does not absorb moisture and is less likely to freeze and break.) • Have extra guy wires, supports, and anchor stakes to strengthen against heavy ice and wind loading.
Vehicle operation	<ul style="list-style-type: none"> • Maintain low engine idle with radios, heater, and lights on will eventually run down the vehicle batteries. • Before increasing engine RPM's to charge the batteries, turn radios off to avoid an excessive power surge.

Continued on next page

Communications in Arctic-Like Areas, Continued

Effects on Vehicle Mounted Radios, continued

Action	Description
Frequency drift	This is caused by <ul style="list-style-type: none">• Older radios that drift during extreme cold.• Not warming up (turn on) radio before operation.• Lower voltage output from a weak battery.• Electrical discharges sending high-pitched static that can blanket frequencies. (Use polystyrene tape and shellac to counter the static.)
Battery conditioning	<ul style="list-style-type: none">• Warming the battery with body heat before operating the radio set will minimize frequency drift.• In northern regions, electrically charged snowflakes or pellets can hit an antenna causing frequency drift.

Communications in Desert Areas

Introduction

Individual equipment techniques enhance desert radio communications in predominantly dispersed areas. Operational challenges arise from obstacles and distance between stations. The following will reduce the downtime and improve communications:

- Grounding
 - Site location
 - Dust prevention
 - Batteries
-

Grounding

Counterpoise is your only option in a desert environment. Radio communications are enhanced effectively in the desert climates. Similar to the arctic environment, counterpoise is different in the desert due to keeping the soil moist under and around the antenna/radio system. This is accomplished in any means available such as water or even urine. Poor electrical grounding will cause the loss of one-fifth to one-third of normal transmission ranges.

Site Location

Selection of high terrain will improve

- The use of antenna systems (horizontal dipoles and vertical antennas)
 - Areas restricted by the use of a whip antenna
 - Stationary sites, but consider secure locations
-

Dust Prevention

Dust seriously effects all communications equipment, accessories, and antennas with electro-mechanical motors (moving parts). Dust and dirt prevention will

- Decrease maintenance downtime
- Reduce damage to moving parts that may be lubricated
- Preserve electrical wire insulation over a period of time with continuous preventive maintenance

Note: Increase the airflow to prevent the overheating of communication equipment while in heated climates.

Batteries

- Batteries (wet and dry cell) do not last as long in the desert heat.
 - Wet cell batteries do not hold their charge in intense heat.
 - Electrolyte evaporates rapidly in intense heat.
 - Add distilled water as needed and have containers ready, check batteries weekly depending on the heat.
 - Other than adding water, all battery maintenance should only be performed by authorized personnel.
 - Increased heat on dry battery supplies cause them to fail rapidly.
 - If you are in a fixed location, keep them out of direct sunlight in a shelter.
 - Open the battery compartment slightly to allow increased ventilation for the battery.
-

Communications in Thick Vegetation (Jungle) Areas

Introduction

Understanding the effects on radios requires careful planning that should include the following considerations:

- Vegetation
 - Maintenance
 - Antenna sites
 - Antenna site diagram
 - Equipment shelter
 - Shelter diagram
-

Vegetation

Limitations of radio communications in jungle areas are

- Foliage that vertically polarizes radio frequency energy that reduces transmission range from 10% to 60%.
 - Wet vegetation causes poor and absorbed signals.
-

Maintenance

Poor maintenance in a tropical jungle environment will result in damage to radios sets

1. Overheating
 2. Exposure to moisture
 - Cover equipment from precipitation.
 - Use dehumidifiers to absorb moisture for gear in sealed containers.
 3. Fungus-high relative humidity causes condensation which, encourages the growth of fungus (refer to TMs).
 - Keep the equipment as dry as possible in lighted areas to halt fungus growth (especially connectors, cables, and bare metal parts.)
 - Keep all air vents clear of obstructions to cool and dry equipment.
 - Use moisture and fungus proofing paint (MFP) to protect equipment after repairs are made or when equipment is damaged or scratched.
 4. Infestation of insects
-

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Communications in Thick Vegetation (Jungle) Areas, Continued

Antenna Sites

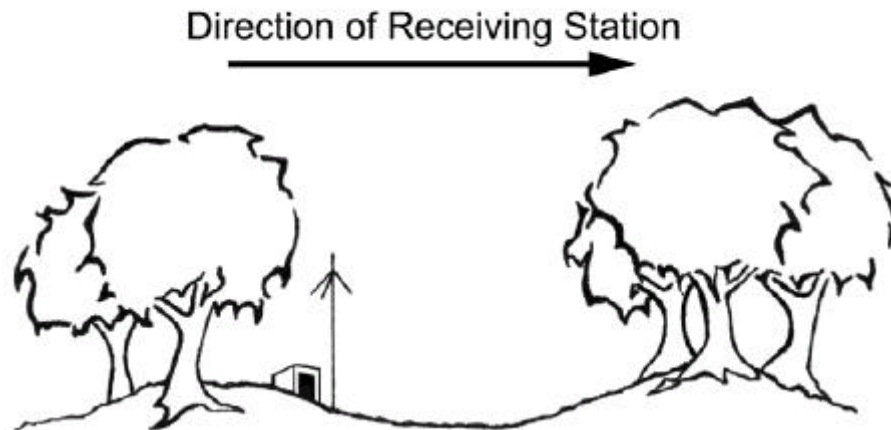
Use horizontally polarized antennas in preference to vertically polarized antennas.

Subject	Technique
Expedient antennas	<ul style="list-style-type: none"> • Dismounted patrols and units of company size and below can greatly improve their ability to communicate in the jungle. • While on the move, you are restricted to using smaller antennas. • When you are not moving, these expedient antennas will allow you to broadcast farther, and receive message traffic more clearly.
Improving range output in the jungle	<ul style="list-style-type: none"> • Antennas should be located in clearings on the edge farthest from the distant station and as high as possible. • Antenna cables and connectors should be kept off the ground to lessen the effects of moisture, fungus, and insects. This also applies to all power and telephone cables. • Complete antenna systems, such as ground planes and dipoles, are more effective than fractional wavelength whip antennas. • Incorporate “tree top” antenna techniques. • Vegetation must be cleared from antenna sites. If an antenna touches any foliage, especially wet foliage, the signal will be grounded.

Note: There are many antenna systems, which could be used in a jungle environment to improve communications reliability. These will not be covered in this course, however, refer to MCI course 2515H, *Antenna Construction and Propagation of Radio Waves*.

Antenna Site Diagram

Direction of receiving station example used in an antenna site clearing is shown below.



Continued on next page

Communications in Thick Vegetation (Jungle) Areas, Continued

Equipment Shelters

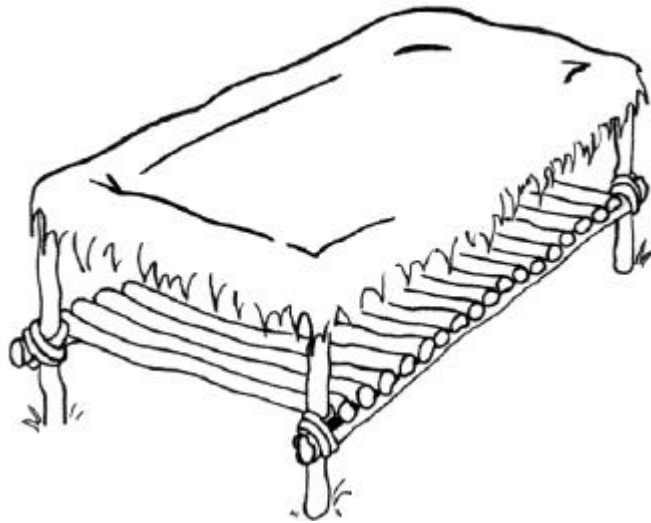
Construct an equipment shelter for your radios to keep equipment off the ground or out in the open to protect from the rain and mud. Use a plastic bag to keep it dry and clean, but be careful the radios do not overheat.

Take the following action to overcome these problems:

- Shelters should have overhead protection for your equipment.
- Construct a solid deck (floor) elevated off the ground.
- Include sides of the shelter to be left open for circulation of air to keep the equipment cool.

Shelter Diagram

Construction of cover for radio equipment is very practical. Structures can be as simple as using a poncho and brush.



Communications in Mountainous Areas

Introduction

When in a mountainous area, consider the following:

- Limiting characteristics
 - Antenna installation techniques
 - Relay stations
-

Limiting Characteristics

In mountains, there are high altitudes including peaks, ridgelines, valleys, ravines, and flatlands that interrupt transmission paths unless you have a straight line of sight to your receiving station. This contributes to rapid changes in weather and may force desert and arctic techniques in the same day to protect your equipment from condensation.

Antenna Installation Techniques

When installing antennas, consider the following:

- The radio propagation (duplicate) will be the line-of-sight because of terrain obstacles.
 - The ground in mountainous areas is a poor electrical conductor. A complete antenna system, such as a dipole or ground-plane antenna with a counterpoise, should be used.
 - Valleys and natural gaps should be used as your communications path between units whenever possible.
 - The only communications equipment capable of bending a radio signal over a mountaintop is high frequency. Normally there is not an overabundance of high frequency radios carried by ground units.
 - Know the exact location of friendly units so that you can move to an alternate position in case you lose communications. Remember, radio transmission paths cannot go through mountains.
-

Radio Relays

Radio relay sites should be positioned so that

- Some type of remedial action of these sites can be used to improve the elements of a Marine Battalion/Regiment mission capabilities.
 - You do not limit the movement of maneuver elements through the mountains to remain within line of sight of each other.
 - Radio relay sites are established on high peaks or ridgelines, point A to point B.
 - If there are no retransmission sets available for use, a radio operator with a radio can do the job just as well.
 - It may take longer to pass the message traffic between the two intended sites, but this technique is as effective as a retransmission set.
 - They will provide reliable communications to the maximum number of stations.
-